

**CULTURAL RESOURCE ASSESSMENT SURVEY
OF THE PROPOSED
INTERNATIONAL SPACE RESEARCH PARK
AT THE JOHN F. KENNEDY SPACE CENTER
BREVARD COUNTY, FLORIDA**

Prepared for:

**Dynamac Corporation
100 Spaceport Way
Cape Canaveral, Florida**

On behalf:

**National Aeronautics and Space Administration
Kennedy Space Center, Florida**

By:

**Archaeological Consultants, Inc.
8110 Blaikie Court, Suite A
Sarasota, Florida 34240**

**Joan Deming - Principal Investigator
Elizabeth Horvath - Project Archaeologist**

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EXECUTIVE SUMMARY

Archaeological Consultants, Inc. (ACI) conducted a cultural resource assessment survey of the proposed International Space Research Park (ISRP) alternatives at the John F. Kennedy Space Center in Brevard County, Florida. Three areas were included in the study: Alternative 1, Alternative 2, and the Space Experiment Research and Processing Laboratory (SERPL) expansion site. The purpose of this investigation was to locate and identify any cultural resources within the project area, and to assess their significance in terms of eligibility for listing in the *National Register of Historic Places (NRHP)*. Fieldwork was conducted in March 2003.

Background research indicated an absence of previously recorded archaeological sites and historic structures within or adjacent to the project area. Previous predictive model survey of the Kennedy Space Center indicated that a portion of Alternative 2 had a moderate potential for archaeological site location; Alternative 1 and the SERPL expansion site were considered to have a low potential. Field survey efforts focused upon the moderate probability zone; other areas were archaeologically sampled. As a result, one new archaeological site was discovered within Alternative 2. This single artifact site (8BR1850) is not considered eligible for listing in the *NRHP*. No historic structures are contained within or adjacent to the project area. Historical research indicated that the citrus groves within Alternative 1 and the SERPL expansion site, at least in part, may date back as far as 1885. However, they appear to not be associated with any persons or events significant in local, regional, or state history.

Development of the ISRP and SERPL expansion site will have no effect on any archaeological sites or historic resources which are listed, determined eligible, or considered potentially eligible for listing in the NRHP. Therefore, it is recommended that the project proceed without further cultural resource involvement.

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1.0 INTRODUCTION

1.1 Project Description

The National Aeronautics and Space Administration (NASA) at the John F. Kennedy Space Center (KSC) is proposing to develop the International Space Research Park (ISRP). The ISRP is a partnership between NASA and the State of Florida to build an environment for world-class research and technology development performed through the collaborative efforts of industry, academia, and government. Included in the ISRP is a Space Experiment Research and Processing Laboratory (SERPL), which will support scientific experiment payloads for the International Space Station, and which will host Florida's university researchers and their colleagues. The Cultural Resource Assessment Survey (CRAS) focused on two proposed development alternatives, Alternative 1 and Alternative 2, as well as a 25-acre SERPL expansion site located directly northeast of Alternative 1.

1.2 Purpose

Archaeological Consultants, Inc. (ACI) conducted a CRAS of the proposed ISRP alternatives and SERPL expansion site at the John F. Kennedy Space Center in Brevard County, Florida in March 2003. The purpose of this investigation was to locate and identify any cultural resources within the project area, and to assess their significance in terms of eligibility for listing in the *National Register of Historic Places (NRHP)*. This study was undertaken to assist NASA in complying with the *National Environmental Policy Act (NEPA) of 1969* (Public Law 91-190), and Section 106 of the *National Historic Preservation Act (NHPA) of 1966* (Public Law 89-665, as amended), as implemented by 36 CFR 800 (*Protection of Historic Properties*, revised January 2001). This study also was conducted in accordance with Chapter 267 of the *Florida Statutes*, and the historic preservation aspects of Florida's Coastal Management Program (Matthews 2002 in Appendix A). This CRAS Report meets the requirements contained in Rule Chapter 1A-46, *Florida Administrative Code*.

2.0 ENVIRONMENTAL SETTING

Environmental factors such as geology, topography, relative elevation, soils, vegetation, and water resources are important in determining where prehistoric and historic archeological sites are likely to be located. These variables influenced what types of resources were available for utilization in a given area. This, in turn, influences decisions regarding settlement location and land-use patterns. Because of the influence of local environmental factors upon the aboriginal inhabitants, a discussion of the effective environment is included.

2.1 Geology

Geologically, Brevard County lies within the mid-peninsular physiographic region of Florida, more specifically within the Coastal Lowlands consisting of the Atlantic Barrier Chain and the Atlantic Coastal Lagoons immediately to the west (Puri and Vernon 1964; White 1970). The barrier islands are composed of relict beach ridges and dunes composed mostly of shelly, fine to medium sands (Scott 1978). Merritt Island and Cape Canaveral make up a large and complex barrier island. The island topography consists of a large area of level flatwoods and an undulating dune and swale complex. Upper elevations in the interior part of the island are roughly 3.3 m (10 ft) and the coastal dunes can achieve 6.6 m (20 ft) in height. Alternative 1 and the SERPL expansion site are level lands with an elevation of 1.5 m (5 ft) and Alternative 2 ranges in elevation from sea level in the swales to 3.3 m (10 ft) on the dune ridges.

Florida has a complex geologic history; there have been periods of deposition when the Florida plateau was submerged and periods of erosion when the seas receded. During the Woodfordian Subage of the Pleistocene Period (21,000 - 10,500 B.C.) major fluctuations in sea levels occurred due to the advance and retreat of the glaciers. At the time of maximum glaciation (approximately 16,000 B.C.) the sea level was as much as 100 m (330 ft) below present level (Delcourt and Delcourt 1981). As sea levels rose due to the retreat of the glaciers, Cape Canaveral and the barrier beaches separating Mosquito Lagoon and the Indian and Banana Rivers from the Atlantic Ocean were formed. Portions of Merritt Island, however, are beach deposits dating from roughly 240,000 years ago (Brooks 1972). Formation of the Indian River/Mosquito Lagoon system occurred approximately 7000 years ago, when the eustatic sea level rise submerged the coastal lands. Hoyt and Henry (1971) note that this barrier island complex is unique in that it is not associated with rivers or former deltas. White (1958; 1970) classifies it as a prograding barrier island complex resulting from the longshore growth of the original cape (False Cape) to the south. The multiple dune ridges paralleling the coast may represent successive stages in its growth. The eastern shore of the Banana River likely was the original beach or an offshore bar which extended south from False Cape before Cape Canaveral began to migrate southward (White 1958:49-51).

There is no uniform consensus on the factors involved in the formation of a barrier island complex, although there are three major theories. These are: a) formation by offshore wave build up of longshore bars; b) formation by spits produced by longshore sand drift growing from headlands which were subsequently breached by storm action; and c) formation due to established beaches which were inundated during the Holocene sea level rise, in which a sufficient supply of sand is present, so that, buildup of the barrier is continued (Leatherman 1988). Erosion of the lagoon shoreline further separates the mainland from the barrier complex forming a wider body of water as the sea level increases (Blatt et al. 1980). Of these theories, the latter appears to apply to this area.

The rise and fall of the various sea level stands has left evidence across the state in the form of a series of former marine terraces and shorelines. There has been ongoing discussions as to the actual number and ages of these terraces (Alt and Brooks 1965; Cooke 1945; Healy 1975; MacNeil 1950). In general, eight terraces are recognized, of which the Pamlico (25-30 ft) and the Silver Bluff (0-10 ft) are pertinent. Healy (1975) maps Merritt Island and the Cape as being within the Silver Bluff Terrace and the Atlantic Coastal Ridge on the adjacent mainland is representative of the Pamlico Terrace.

Changes in sea level resulting from the glacial eustatic ice water volume has resulted in the growth of the Cape by successive increments (Mehta and Brooks 1973:29). Radiocarbon (Osmond et al. 1970) and paleontological (Brooks 1972) dating of the Merritt Island deposits indicate that the coastal feature is related to Ice Age sea level stands. The barrier strand along Mosquito Lagoon has been shown to be contemporaneous with the formation of Cape Canaveral, though its evolution is "...associated with prevailing erosion, overwash, and landward migration" (Mehta and Brooks 1973:29).

2.2 Soils

The surficial geologic deposits on Merritt Island are composed primarily of sand and sandy coquina of Pleistocene and Holocene age (Schmalzer and Hinkle 1990). The Pleistocene deposits of Merritt Island are generally mapped as the Anastasia Formation which is characterized by shelly sand, some dune sand, loose coquina, and very hard shelly limestone. This formation formed in beach and shallow-water nearshore environments (Davis 1997). Cape Canaveral and the active barrier beach are mapped as undifferentiated deposits of shelly sand and sand and medium fine sands and silts, as well as clay and marl (Brooks 1981; Scott 1978) of the Holocene age. These overlay unconsolidated beds of fine sand, shells, clay, and calcareous clay of the upper Miocene and Pliocene age (Brown et al. 1962).

Alternative 1 and the SERPL expansion site are relatively level and poorly drained, and underlain primarily by the Copeland complex soils. These are nearly level, very poorly drained soils on low flats (Huckle et al. 1974). The other soils are also nearly level and poorly to very poorly drained and include Anclote sand, Bradenton fine sand, shallow phase, Chobee sandy loam, Felda sand, Wabasso sand, and swamp. Alternative 2 is in an

area of dune and swale topography, with the dunes characterized by moderately well drained Pomello sands. The swales consist of the poorly drained Immokalee and Ancloste sands (Huckle et al. 1974).

Table 2.1. Soil Types and Drainage Characteristics (Huckle et al. 1974; Schmalzer and Hinkle 1990).

Soil Type	Drainage Characteristics	Typically found on/in
Ancloste sand	nearly level, very poorly drained	marshy depressions and swales in flatwoods,
Bradenton fine sand, shallow variant	nearly level, poorly drained	low marine terraces
Chobee sandy loam	nearly level, very poorly drained	marshy depressions
Copeland Complex	nearly level, very poorly drained	low flats
Felda sand	nearly level, poorly drained	broad low flats and sloughs
Immokalee sand	nearly level, poorly drained	flatwoods and low ridges between sloughs
Pomello sand	nearly level, moderately well drained	broad low ridges and low knolls
Swamp	nearly level, poorly and very drained; generally flooded	dense wetland hardwoods, cypress, vines and shrubs
Wabasso sand	nearly level, poorly drained	flatwoods and low ridges

2.3 Geohydrology

The hydrologic system of this region is dependant upon the geologic structure of the cape and island as well as the local climatic conditions. Mosquito Lagoon is separated from the Indian River by a lithified coquina shell ridge extending from the mainland southwest from Oak Hill to Merritt Island. As such, the areas to the north of this ridge drain into Mosquito Lagoon and to the south into the Indian River.

The barrier island making up the eastern edge of Mosquito Lagoon and the Indian River is steep and narrow with a very high berm. The inland side of the island is mainly a single dune ridge covered with thick scrub vegetation and having a gentle backslope. Evidence suggests that it was not formed solely by normal wind action because in places, the dunes have been covered as a result of blow-over and overwash during severe storms. The barrier is migrating landward by erosion on the seaward side and deposition of washover on the lagoonal side. This is indicated by the occasionally exposed mangrove stumps on the lower beach face after severe storms (Mehta and Brooks 1973:30).

The Mosquito Lagoon and Indian River can be classified as estuaries as well as lagoons. Pritchard (1967:3) defines an estuary as a semi-enclosed coastal body of water which connected to the open ocean and within which the salt water is measurably diluted with fresh water derived from inland drainage. Based on their modes of formation, Pritchard

(1967) has distinguished four types of estuaries, of which the bar-built estuary is pertinent to this discussion.

Bar-built estuaries occupy basins produced adjacent to a secondary coast due to the formation of barriers across reentrants in the coast line (Schubel 1971:II-6). The barriers must be breached by one or more inlets (Shepard 1963). More than one river may empty into the estuary although the total drainage is usually small, with a low fresh water input. The inlets may change and/or migrate drastically during severe weather, and the lower reaches of the rivers are generally inundated by the latest rise in sea level. Since the inlet (or inlets) is usually restricted, the tidal currents may be quite strong there. The inlets are generally small compared to the area of the embayment and as such, tidal action is considerably reduced within the estuary. These estuaries are usually shallow, and the wind is frequently the most important mechanism for mixing the salt and fresh waters within the lagoon (Schubel 1971:II-6-7).

A major factor effecting lagoon salinity and its general makeup is the presence and/or absence of tidal inlets. These may be formed due to the erosive wave action or during severe storm activity. Inlets migrate down current due to erosion by the tidal currents and sand deposition of spits formed on the updrift side of the channel in response to the wave generated longshore currents. These spits then may form islands that increase in size and stability once the growth of plants, such as mangroves, is established on these islands (Blatt et al. 1980; Hamblin 1985; Stanley 1987).

Mehta and Brooks (1973) documented five separate prehistoric inlets into Mosquito Lagoon. However, these have all been closed off for some time. The closest interchange with this lagoon and the Atlantic Ocean at this time is at Ponce de Leon Inlet. Tidal interchange by way of this inlet is virtually absent at its southern end. The northern end of the Indian and Banana Rivers is also distant from a daily influx of salt water. The Sebastian Inlet, located some 40 miles south of the Cape, is the closest inlet. In the Indian and Banana Rivers and Mosquito Lagoon the tides are nearly insensible, the mean rise and fall at most places being less than two tenths of a foot (USCG 1883). The tidal interchange by way of Haulover Canal is also virtually absent. As fresh water enters the lagoons through the inlets, it becomes trapped, mixed with the salt water, and becomes brackish. The salinity changes during the year due to the amount of fresh water intrusion, which in turn, establishes optimum eco-niches for estuarine flora and fauna. Fresh water is introduced by small creeks originating in the numerous swamps, by fresh water springs located along the mainland shoreline, and through the annual rainfall. As Davis notes (1997:159) the widely spaced inlets and absence of washover produces a back-barrier area that is narrow and contains little in the way of marsh and tidal-flat environments and results in the waters distant from the inlets being essentially fresh, of which the Indian River is a prime example.

The major groundwater system is the Floridan aquifer. This aquifer is recharged in the high ridges located in central Florida and is bounded in most places by the clays and silts of the Hawthorne Formation. The major impact of fresh water intrusion into the lagoonal/estuarine system is by way of the secondary aquifers occurring within the

Hawthorne Formation and the Caloosahatchee Marl Equivalent (Edward E. Clark Engineers-Scientists 1987, referenced as Clark 1987 in Schmalzer and Hinkle 1990).

The surficial aquifer is recharged through direct infiltration of precipitation with the higher dune ridges (made up of permeable sands) being particularly important. These dune ridges are not subject to subsurface hardpans, so that these discharge areas flow east and west towards the lagoonal/estuarine systems and the ocean. The wet season (generally September - October) produces the highest water table, which gradually drops as precipitation decreases and evapotranspiration increases. This surficial aquifer supplies the major portion of fresh water intrusion into the marsh and lagoonal/estuarine systems (Clark 1987).

The surficial aquifer is divided into several subsystems. Of these, the West Plain and the Dune-Swale subaquifers are pertinent to the project. The Dune-Swale subsystem is made up of high ridges where permeable sand favors recharge. It is the only area in which freshwater is recharged into the deeper layers within the surficial aquifer. During the rainy season, the swales collect the rain water and become flooded, leading to lateral and downward drainage into the groundwater (Schmalzer and Hinkle 1990). The West Plain subsystem has a typical water table of three feet below surface and a high evapotranspiration rate. The interface of the saline and fresh water fluctuates greatly, producing variable water quality. At times of low water, saline water replaces the fresh water; at times of high water, the saline water is forced out (Schmalzer and Hinkle 1990).

2.4 Sea Levels

The physiographic features of the Cape were formed because of eustatic sea level change, waves, longshore currents, littoral drift, outwash, climate, and wind. During the peak Pleistocene glaciation periods, the sea level was as much as 330 ft below the present level. When human populations began entering Florida, approximately 14,000 years ago, the sea level was about 115 ft lower than present. Thus, any coastal sites dating from this period and for several millennia hence would have been inundated by the rising sea levels.

The relative change in sea level at a given location is based upon eustatic effects, regional influence, and local phenomena (Leatherman 1987:57). Though numerous sea level studies have been conducted in Florida, few have been centered along Florida's Atlantic coast (Tanner 1993). The southeast coast provides the opportunity to compare worldwide sea level rise with local sea levels as influenced by uplift or subsidence, simply because this area appears to have been relatively quiet tectonically during the Holocene (Richards 1971:7-8).

There are two conflicting schools of thought on the mode of sea level increase. The Fairbridge Curve recognizes several Holocene stands of the sea above the present level whereas the Shepard Curve is typified by a gradual rising sea level with no stands higher than present sea level. Fairbridge (1961) views the change in sea level as a frequently

oscillating rise beginning approximately 5000 years ago, and reaching a stage higher than present sea level. Shepard (1963) views the change as being gradual with no oscillation and with the level never exceeding the present.

Bloom (1983) developed a new approach for viewing factors involved in sea level change by emphasizing the change from water weight being tied up within the glaciers to the weight once the glaciers melted and the water returned to the ocean. Analysis of five eastern United States coastal sites supports the hypothesis that post-glacial sea level rise has been sufficient to isostatically deform coastal areas.

This approach prompted research in the sea level records of oceanic islands as a means for testing theories of isostasy and research into the models of the Earth's reaction to mass shifts and the subsequent effects this shifting had on sea levels (Cronin 1987). Through coastal archaeological site interpretation, Colquhoun et al. (1981) present data for a gradual sea level increase by fluctuation. During the middle and late Holocene in the southeastern United States, sea level generally rose in the manner of the Shepard Curve, but through a series of fluctuations similar to the Fairbridge Curve (Colquhoun et al. 1981:147). Most researchers agree that, with minor temporal differences, the oscillation frequency is approximately 400 to 500 years (Cronin 1987; Tanner 1992) and they are attributed to glacio-eustatic processes (Cronin 1987). Tanner (1992:302) states that within the last 3000 years, sea level has experienced four rises and three drops in the range of 3 to 10 feet.

Quaternary studies have shown that "... global sea level exceeded its present level only once during the last interglacial interval, at about 125,000 B.P. " (Cronin 1987:231). Tanner's (1992:302-303) work on St. Vincent Island, Florida has shown that sea level was rising about 1000 years ago and by A.D. 1200 it began to fall. It reached its low level by A.D. 1400. That level represents the Little Ice Age (Lamb 1981). The sea level began to rise about A.D. 1750 and it continued to rise until at least A.D. 1900. Although sea level has not yet reached as high as it did on at least two previous occasions in the last 8000 years, it nevertheless now stands well above its average position for late Holocene time. Richards (1971) concluded that since the last interglacial, Florida has tectonically been stable. Studies in the Charlotte Harbor area agree in general with these conclusions (Stapor et al. 1987, 1991): from roughly 2000 to 1500 B.P. sea levels were roughly four feet above today's level and there was another "high" stand (ca. one foot above present levels) from roughly 1000 to 500 B.P. (Stapor et al. 1991:Figure 14). During the high sea level stands, archaeological sites located on the margins of the lagoons would likely have been at least slightly inundated. Although, this would not preclude occupation of the area, as evidenced by the formation of sites such as Seminole Rest, near Oak Hill, that originated on a submerged sand bar (cf., Horvath 1995).

2.5 Climate

The present climate in east-central Florida is humid subtropical. The temperature ranges from 160 C in January to 280 C in August. The average rainfall is approximately 52

inches, most of which falls between May and October. Periodically, weak cold fronts occur during late fall which produce steep declines in the water temperature. During the winter months, the north winds and declining air temperatures that occur produce rapid mixing of the water and may reduce the water temperature to near the freezing (3 to 40 C) point in a matter of hours. A rapid decline of temperature, such as this, places stress on the temperate and sub-tropical biotic systems. This can lead to extensive vegetation damage, and massive fish and bivalve death within the lagoons. In January of 1987 and 1988, record-breaking low temperatures caused the green and loggerhead turtle to float to the surface of the lagoon (Mendonça and Ehrhart 1982:162). This type of vertebrate "stunning" would have allowed for easy capture by the native inhabitants.

Environmental conditions when the aboriginal populations first arrived in Florida (ca. 12,000 B.C.) were different from those of today. The paleo-environment has been reconstructed based upon palynological and archeological investigations. Palynological studies, conducted in Florida and Georgia, suggest that between 13,000 and 5000 years ago, Florida was covered with an upland vegetation community of scrub oak and prairie (Watts 1969, 1971, 1975). This is reflective of a drier climate. Beginning about 5000 B.C., the southern pine forests replaced the oak savannah in the interior and extensive swamps and marshes developed along the coast (Carbone 1983). As the pine expanded, prairie plants were eliminated and other trees became established. The protracted growth of the pine population suggests a slowly changing climate (Watts 1980:405). The changes seen in the vegetational communities may have been in response to the fluctuating sea levels and corresponding water tables as a result of increase precipitation at this time (7000-5000 B.C.) (Watts 1980:405).

The current environment has been in existence for the last 5000 years. The aboriginal inhabitants would have developed cultural adaptations in response to the environmental changes taking place. These alterations were reflected in prehistoric settlement patterns, site types, site locations, artifact forms, and variations in the resources used. As evidenced by the numerous shell mounds and middens located along the perimeter of the lagoons, molluscs were a significant factor within the aboriginal subsistence economy.

2.6 Floral and Faunal Resources

The coastal strand of the Florida Atlantic coast lacks the variable food resources necessary to sustain a human population for long periods. Vegetation is restricted to those species that are salt spray tolerant. There is no evidence of long-term aboriginal occupation of this coastal area. However, small temporary camps would have been established to exploit coquina, razor clams, and sea turtles during the appropriate seasons (Larson 1980). Longer-term occupation sites would have been located along the shores of the lagoon rather than along the ocean where a wider variety of resources would have been obtained. Another factor affecting coastal settlement was the fact that during the period between 12,000 and 3,000 years ago, the sea-levels were rising too rapidly for a stable coastal network of environments including the barrier islands, inlets, estuaries, and marshes to develop (Davis 1997:158).

The vegetation associated with the lagoons and marshes is more variable, serves as a windbreak, and makes available a wider variety of food resources. Vegetation receives most of its nourishment from the ground water and rain since the soil consists of predominantly sterile acidic spodosols (Head and Marcus 1984:150-153) which are low in plant nutrients such as calcium and magnesium (Strahler and Strahler 1979:215).

Soil types effect what types of plants are expected to grow within a given area. In the Alternative 1 and SERPL expansion site, the poorly drained soils would have pines, cabbage palm, and hardwoods, including live oak, magnolia, bay, and sweetgum. The Wabasso sands are more often associated with longleaf and slash pines, with an understory of saw-palmetto. Alternative 2 is in an area of dune and swale topography. Vegetation of the swales can consist of pine flatwoods or hardwood swamps while the dune vegetation would generally have a scattering of longleaf pine with an understory of scrubby live oak, saw-palmetto, and grasses (Huckle et al. 1974). For at least the past several decades, the Alternative 1 and SERPL expansion site have been used as citrus groves; Alternative 2 is undeveloped.

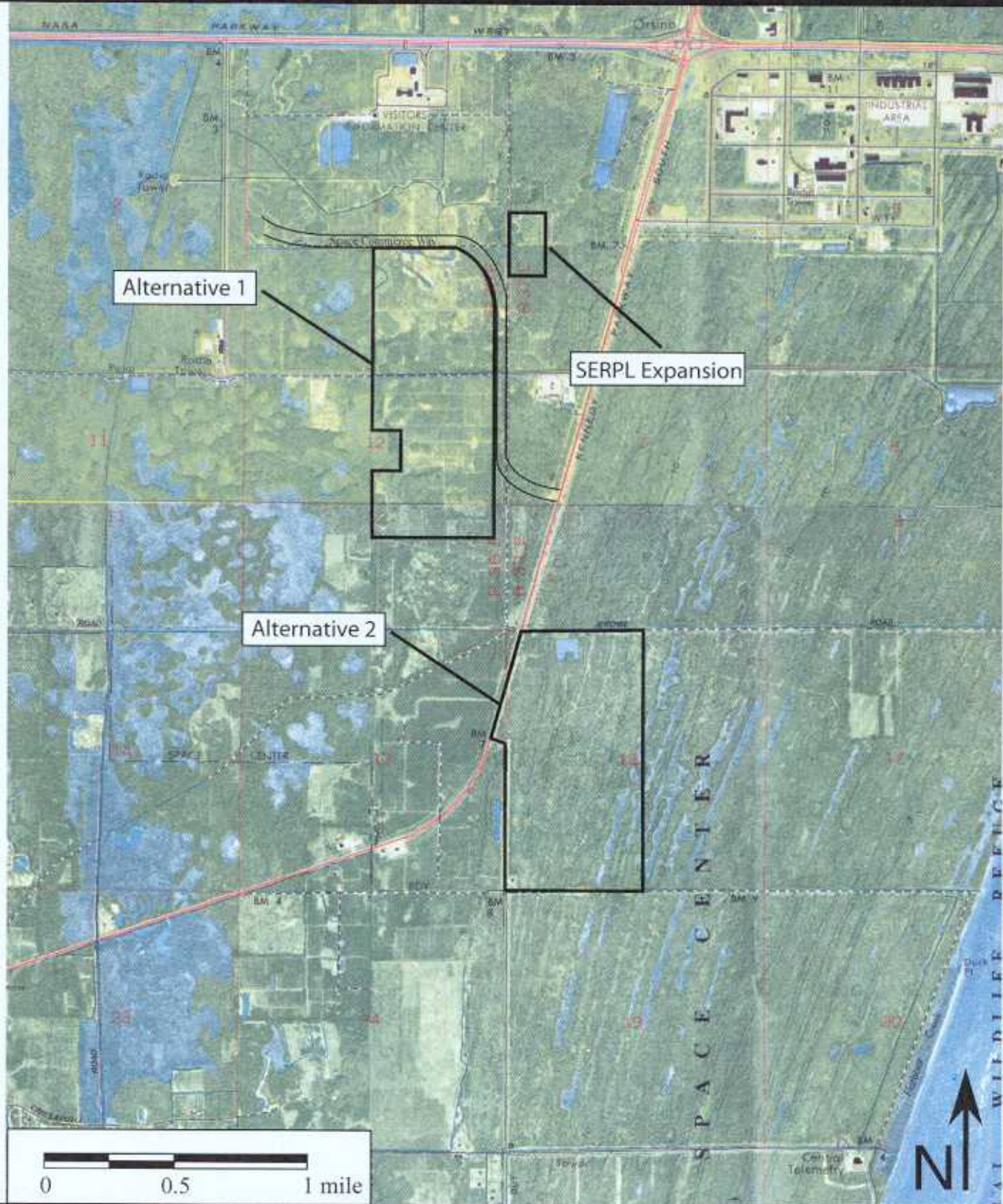


Figure 2.1. Project Location Map. Township 23 South, Ranges 36 and 37 East (USGS Orsino, Fla. 1976 and Courtenay, Fla. 1976).





Photo 2.1. Looking west at the citrus grove in Alternative 1



Photo 2.2. Looking east at western slope of the ridge in Alternative 2.

3.0 PREHISTORIC REVIEW

A discussion of the regional prehistory is included in cultural resource assessment reports to provide a framework within which to examine the local archaeological record. Archaeological sites are not individual entities, but were once part of dynamic cultural systems. As such, individual sites cannot be adequately examined or interpreted without reference to other sites and resources in the region.

In general, archaeologists summarize the prehistory of a given area (i.e. the archaeological region) by outlining the sequence of archaeological cultures through time. Archaeological cultures are defined largely in geographical terms, but also reflect shared environmental and cultural factors. The International Space Research Park (ISRP) is within the East and Central Lakes archaeological region, as defined by Milanich and Fairbanks (1980) and Milanich (1994) (Figure 3.1). The spatial boundaries of the region are somewhat arbitrary, and it is after 500 B.C. that characteristic regional differences become more evident in the archaeological record. There are differences, however, evident as early as the Middle Archaic period when the characteristic Mount Taylor horizon develops along the St. Johns River.

The Paleo-Indian, Archaic, Formative, Mississippian and Acculturative stages have been defined on the basis of unique sets of material culture traits such as characteristic stone tool forms and ceramics, as well as subsistence, settlement and burial patterns. These broad temporal units are further subdivided into culture horizons, phases or periods: Paleo-Indian (Clovis, Suwannee, Dalton?), Early Archaic (Bolen, Kirk), Mount Taylor, Orange, St. Johns I / Malabar I, and St. Johns II / Malabar II (Table 3.1). The Paleo-Indian and Early Archaic subdivisions have been put forth by Widmer (1988) and Austin (2001) based on work in the Caloosahatchee and Central Peninsular Gulf Coast archaeological regions and are likely applicable to most of the state. A brief summary of these periods follows.

3.1 Paleo-Indian

The Paleo-Indian stage is the earliest cultural manifestation in Florida, dating from roughly 11,000 to 8000 B.C. (Austin 2001; Milanich 1994). Archeological evidence for Paleo-Indians consists primarily of scattered finds of diagnostic lanceolate projectile points. Clovis points characterize the Clovis horizon (ca. 11,000-10,000 B.C.), Suwannee and Simpson points are the diagnostic forms for the Suwannee horizon (10,000-9,000 B.C.), and the Dalton horizon (9000-8000 B.C.), which is poorly understood in the state, is identified by the presence of Dalton points. During this late Paleo-Indian period, the large lanceolate Suwannee and Simpson points may have been replaced by the smaller Tallahassee, Santa Fe, and Beaver Lake types (Milanich 1994:53). However, Austin (2001) notes that more often than not, these latter point types are most often recovered.



Post- 500 B.C. regions of precolumbian Florida

Figure 3.1 Florida Archaeological Regions (Milanich 1994:278).
The project area (★) is located in the East and Central Region.



Table 3.1. East and Central Lake Cultural Chronology and Traits.

Cultural Period Time Frame	Cultural Traits
Paleo-Indian 11,000-8,000 B.C.	Migratory hunters and gatherers; Clovis, Suwannee and Simpson projectile points; unifacial scrapers.
Early Archaic 8000-6000 B.C.	Hunters and gatherers; less nomadic; increased utilization of coastal resources; Greenbriar, Bolen, Arredondo, Hamilton and Kirk Serrated points; increase in population size and density.
Mount Taylor 6000 - 2000 B.C.	First occupation of the St. Johns River valley; evidenced by large freshwater shell middens; burials in wet environment cemeteries and middens; increased sedentism; shellfish is an increasingly important part of the diet; more evidence for coastal occupation; stemmed, broad bladed projectile points, Newnan points most common; steatite; fired clay objects.
Orange/Transitional 2000 - 500 B.C.	Appearance of ceramics; Orange series is fiber tempered and molded; plain ceramics early on, incising during later periods; increase occupation of the coastal lagoons; cultigens may be utilized; toward end of period (Transitional) increased use of sand as a tempering agent and an apparent increase in population size, socio-political complexity, and territorial range
St. Johns I/Malabar I 500 B.C. - A.D. 800	Rise in sea level brings wetter conditions. Continuation of hunting-fishing-gathering- subsistence pattern. Villages and camps located adjacent to freshwater and coastal resources. Plain and incised varieties of St. Johns ceramics; Glades Plain, Belle Glade Plain, and Sand Tempered Plain ceramics. Dunns Creek Red ceramics are common. Wares are coiled, not molded; some early pottery has fiber and quartz sand tempering. First use of burial mounds, which become larger over time, some containing log tombs. Increased influence of Weeden Island populations appears late. Trade is evidenced by exotic materials within the burial mounds.
St. Johns II / Malabar II A.D. 800-1565	St. Johns check stamped ceramics appear; increased use of burial mounds; mound burial seems to be saved for higher status individuals; pottery caches found in mounds; increase in size and number of villages; continuity in settlement patterns and artifact types; increase in the variety of burial patterns. Evidence of Mississippian influence seen; continued use of plain and check stamped ceramics; platform mound make their appearance at some of the ceremonial complexes. European artifacts occasionally found in the burial mounds; and middens; Timucuan speaking groups; disease beginning to decimate the aboriginal populations.

from Late Archaic or early Woodland period components as opposed to Paleo-Indian ones.

The majority of Paleo-Indian sites are associated with the rivers in the north-central portion of Florida (Dunbar and Waller 1983). At that time, the climate was cooler and drier. Vegetation was typified by xerophytic species with scrub oak, pine, open grassy prairies, and savannas being the most common (Milanich 1994:40). Sea levels were as much as 35 meters (115 feet) below present levels and the coastal regions extended miles beyond present day shorelines (Milliman and Emery 1968). Miller (1998), however, suggests that around 10,000 years ago, along the Atlantic coast, the shoreline may have

been 100 m (62 mi) to the east and sea level roughly 82 m (269 ft) below present levels. It is probable that many of the sites dating from this time period have been inundated (Clausen et al. 1979; Dunbar 1997; Ruppé 1980; Scholl et al. 1969).

Some of the information about the Paleo-Indian period is derived from underwater excavations at two inland spring sites in Sarasota County: Little Salt and Warm Mineral Springs (Clausen et al. 1979). Traditionally, this time was characterized by small nomadic bands of hunters and gatherers. Daniel (1985) has proposed a model of early hunter-gatherer settlement that suggests that some Paleo-Indian groups may have practiced a more sedentary lifestyle than previously believed. Since the climate was cooler and much drier, it is likely that these nomadic bands traveled between permanent and semi-permanent sources of water, exploiting seasonally available resources. This has been referred to as the Oasis hypothesis (Dunbar 1991). These watering holes would have attracted the animals upon which the Indians hunted, thus providing food and drink. In addition to being tied to the water resources, most Paleo-Indian sites are also located proximate to sources of good quality lithic raw materials (Daniel 1985; Daniel and Wisenbaker 1987; Dunbar 1991; Goodyear et al. 1983). Given these parameters, Miller (1998:54-57) suggests a higher probability for Paleo-Indian occurrence around or near Salt Springs, Silver Glen Springs, and Fern Hammock Springs, as well as a freshwater spring 4 km (2.5 mi) offshore from Crescent Beach. In addition to these specific locales, he considers the Crescent Ridge, located between the St. Johns River and Crescent Lake, and areas of surficial exposure of Hawthorn and Avon Park Formations to have higher probabilities for Paleo-Indian occupations. Other than the offshore spring, these areas and springs are located in eastern Marion and southern Putnam Counties.

Excavations at the Harney Flats Site in Hillsborough County (8HI507) has provided a rich body of data concerning Paleo-Indian lifeways (Daniel and Wisenbaker 1987). It has been suggested that Paleo-Indian settlement may “not have been related as much to seasonal changes as generally postulated for the succeeding Archaic period,” but instead movement was perhaps related to the scheduling of “tool-kit replacement, social needs, and the availability of water,” among other factors (Daniel and Wisenbaker 1987:175). The excavations at the Colorado Site in Hernando County revealed a Paleo-Indian lithic workshop and encampment where that manufacture of blanks appears to have been a major site function (Horvath et al. 1998). The numerous expedient flake tools and the relative lack of formal tool forms may suggest that this site may date from the later Paleo-Indian period when foraging adaptations characterized by high residential mobility and expedient technologies became more prominent (Anderson 1996; Cable 1996).

Evidence for Paleo-Indian occupation within the East and Central Lake region is limited. This area is, however, outside of the Suwannee/Simpson macroband area postulated by Anderson (Anderson 1996:38). Two sites were reported to have had human remains and artifacts in associated with extinct animal bones; these are the Melbourne Golf Course (BR44) and Singleton (BR47) sites reported by Gidley and Loomis in the mid 1920s (Rouse 1951). The Helen Blazes Site (BR27), located roughly 12 miles inland from Melbourne also has a reported Late Paleo-Indian component (Bense and Mattick 1994; Edwards 1954)

3.2 Archaic

The beginning of the Archaic is denoted by interrelated environmental and cultural changes. The environmental changes associated with the end of the Pleistocene necessitated modification of the extant prehistoric settlement patterns and subsistence strategies. Whereas the Paleo-Indians depended more heavily upon the Pleistocene megafauna and the relatively limited number of freshwater sources, Archaic populations hunted smaller game and learned to effectively exploit their changing environment. The gradual environmental changes led in part to the extinction of the Pleistocene fauna as well as resulted in the change in composition and distribution of various vegetative communities (Miller 1998). The adaptive changes of the aboriginal populations resulted in an increase in the number and types of archeological sites, such as marine and freshwater shell middens. The effects of the changing environment also can be seen in the variation in site locations. Although Early Archaic materials are often found in association with Paleo-Indian deposits, especially around water sources, other Early Archaic sites are located in areas devoid of Paleo-Indian components.

Early Archaic sites are recognized by the presence of Greenbriar and Bolen points as well as Kirk, Hardee Beveled, Hamilton, Arredondo, Sumter, and Thonotosassa varieties (Bullen 1975). Milanich (1994:64) notes that there are no well-documented Early Archaic coastal or riverine shell midden sites. This may be due to sea level rise as opposed to avoidance of these areas. Archaeological excavations at the Fort Florida Midden (8VO48), along the shore of the St. Johns River, revealed an Early Archaic component based upon the recovery of a Kirk Serrated and a Kirk Corner Notched point (Johnson and Basinet 2002). It is unclear, however, whether or not the Archaic component included the freshwater shell midden or whether that material was associated solely with the more recent components.

Discoveries at Little Salt Spring in Sarasota County (Clausen et al. 1979) and the Windover site (Doran 2002b) in Brevard County indicate that bone and wood tools, as well as fabric and cordage, were an important part of the material culture. The archaeological record suggests a pattern of exploiting both coastal and interior resources. Although Miller (1998:64) has suggested that marine and estuarine resources had virtually no role in Early and Middle Archaic adaptation, the Windover Site has artifacts manufactured from sharks teeth as well as marine materials (Dickel 2002; Penders 2002). Most Early Archaic sites are small, seasonal campsites. This type of site may suggest that small bands moved seasonally in search of food. The Early Archaic tool assemblages are more diverse than the preceding Paleo-Indian tool kits, and include specialized stone tools for performing a variety of tasks (Milanich and Fairbanks 1980). Excavations at the Sligh Site (8SE1332) recovered a Kirk Serrated and Hardee Beveled point below a St. Johns I period shell midden (Dickinson and Wayne 1996). A possible Kirk Serrated point was also recovered from the Windover Site (Dickel 2002; Penders 2002). A Greenbriar/Bolen point was recovered from the Land's End Site (8SE1310) and a Bolen Beveled point was recovered from the Alauqua Borrow Pit Site (8SE1123) (Burger and Stine 1992; Ellis et al. 1994). Two Early Archaic beveled points were also recovered from the surface at the Tyre's Farm Site (8SE1311) (Ellis et al. 1994). The Zellwood site in Orange County, on the shore of Lake Apopka, has an Early Archaic component as

evidenced by Beaver Lake and Marianna projectile points (Dreves 1974). The Nalcrest Site in Polk County has also yielded archaeological evidence of this time period (Bullen and Beilman 1973).

During the Middle Archaic, wetter conditions prevailed, sea levels began to rise, and pine forests and swamps began to emerge (Watts et al. 1996). The climate changed to one of more pronounced seasonality with warmer summers and colder winters, though by 4000 B.C. the climate became essentially the same as that of today (Watts et al. 1996:29). Settlement became focused within coastal and riverine locales (Milanich 1994:64). The Mount Taylor period has been identified for the time of roughly 5000-2000 B.C. (Milanich 1994). Subsistence was based on hunting, fishing, shellfish collecting, and plant gathering. Sites are generally located along the Atlantic coast or along the upper reaches of the St. Johns River and the Oklawaha and Wekiva Rivers (Ste. Claire 1990; Weisman 1993; Wheeler et al. 2000). The previously proposed theory that Archaic populations practiced a seasonal migration pattern between the interior and the coast has been questioned (Russo and Ste. Claire 1992; Ste. Claire 1990). Evidence from Horr's Island, located along the southwest Florida coast, indicates that this Middle Archaic site was occupied during all seasons of the year (Russo 1991) and investigations in northeast Florida also confirm year-round occupations at some sites (Russo 1992, 1996b; Russo et al. 1993; Russo and Ste. Claire 1992). Miller (1998:68) suggests that when sea levels reached their current positions, the St. Johns River changed its riverine characteristics to become similar to a lake in the upper reaches and more estuarine in the lower reaches. This allowed for the development of the wide resource base, especially beds of freshwater snails that required quiet waters (Clench and Turner 1956).

About 4,000 B.C., present-day vegetation patterns became established; hammocks of broad-leafed mesic trees, pine forests on uplands, and bayhead and cypress swamps became significant plant communities (Watts 1971). The archaeobotanical research at the Groves' Orange Midden (4260-2130 B.C.) and the Lake Monroe Outlet Midden (4040-3090 B.C.) confirms an environment similar to that which is present today (ACI/Janus 2001; Newsom 1994; Purdy 1994b). Most of the botanical remains were from wetland species, including trees and shrubs common along the lake margin, river swamp, and backwaters. Upland species were also utilized. It is believed that populations combined hunting and gathering into a productive subsistence strategy, and as a result, occupation became more sedentary and village life began (Milanich and Fairbanks 1980:147-152). Middens of mystery snail, apple snail, and mussel provide evidence of occupation and resource exploitation along the rivers of east and central Florida (Cumbaa 1976; Ellis et al. 1994; Fryman et al. 1978). The Lake Monroe Outlet Midden is somewhat anomalous in that the mystery snail was not a major portion of the subsistence economy, rather apple snail and mussel were much more important (ACI/Janus 2001). Preliminary analysis of the faunal materials from the Fort Florida Midden (8VO48) [1/8" screen and shell removed] suggests a subsistence economy based on the nearshore riverine resources, including catfish, gar, bowfin, eel, and turtles with the terrestrial resources including deer, raccoon, rabbit, and gopher tortoise (Quitmyer 2002).

The type site for this period is the Mount Taylor site in Volusia County, investigated by C.B. Moore in the 1890s (Moore 1893). The artifact inventory of the Mt. Taylor people, as evidenced at Tick Island, Groves' Orange Midden, and the Lake Monroe Outlet Midden, includes stone projectile points, tools, and microliths, as well as tools and decorative items of shell, bone, and wood (ACI/Janus 2001; Aten 1999; Jahn and Bullen 1978; Purdy 1994a; Wheeler and McGee 1994a, 1994b). Numerous shell and bone items recovered from these sites indicate contact with coast. Modified shark teeth, *Busycon* vessels, and other shellfish (oyster, arc, angel wing, cockle, etc.) remains were recovered from both sites. In addition, the recovery of *Strombus gigas* implements indicates contact with the south Florida coast, as this shellfish is only recovered south of Palm Beach. It is not certain whether these items were deposited on site through trade or actual travel to the coast. Russo and Ste. Claire (1992) suggest that the occupations in these two major environmental locales (St. Johns River valley and the Atlantic coast) were, in fact, separate cultural entities, not one group migrating back and forth. Although there is a similarity in tool and artifact assemblages, the settlement and subsistence patterns are quite different (Russo 1988).

According to Milanich and Fairbanks (1980:151), one of the more interesting aspects of the Mount Taylor culture is evidence for mass burial interments in specially prepared areas within shell middens. Such burials were found at Tick Island along the St. Johns River (Aten 1999; Bullen 1962; Jahn and Bullen 1978). Milanich (1994:81) suggests that Early and Middle Archaic peoples used aquatic environments for burial. The Early Archaic Windover site, located near Titusville, contained primary and flexed burials within a peat pond. These were held in place with wooden stakes and the interments included grave goods such as textiles and worked bone, shell, and wood (Dickel 2002; Doran 2002a). Underwater interments have also been recovered from the Middle Archaic Bay West Site near Naples, Republic Groves Site in Hardee County, and Nona's Site in southeast Sarasota County (Beriault et al. 1981; Luer 2002; Wharton et al. 1981). Each site, like Windover, had an adjacent land component evidenced by a midden. The Gauthier cemetery, dating from the Middle to Late Archaic, was situated on a palm island within a slough between a pond and Lake Poinsett, and contained primary and flexed burials (Carr and Jones 1981; Sigler-Eisenberg 1984b). The burial mound at Tomoka (8VO51) is one of the earliest in Florida (Piatek 1994). Russo (1996a:284) suggests though that the Archaic burials mounds of Florida (Tomoka and Horr's Island) were not the precursors to the extensive burial mound use seen in the more recent past, rather, they were short-lived, dead-end traditions.

The Middle to Late Archaic/Mount Taylor sites recorded throughout the state include large base camps, smaller special-use campsites, quarries, and burial areas and within East Florida, extensive shell middens. The large stemmed projectile points, especially the Newnan type, are diagnostic of Middle and Late preceramic Archaic period sites. Other common point types include Hillsborough, Levy, Putnam, Alachua, and Marion (Bullen 1975). In addition, silicified coral was more prevalent as a lithic tool raw material (Milanich 1994) and thermal alteration of the stone became more common (Ste. Claire 1987).

Interior sites include the smaller lithic scatter campsites that were most likely used for hunting or served as special use extractive sites for such activities as gathering nuts or other botanical materials (Ste. Claire 1989, 1990). Nut collecting stations would have been used seasonally. Within the Spruce Creek Basin, small temporary extractive camps were present in the upper reaches during the Middle to Late Archaic period, but the major sites are all located in the lower estuarine areas. No settlement or short-term use of the middle reaches of the creek have been documented (Ste. Claire 1998). There also is no evidence of occupation or utilization of the middle and upper reaches of the Tomoka River despite the presence of elevated, well-drained lands proximate to freshwater, and an abundance of natural resources (Payne 1985; Ste. Claire 1998). The McDonald Farm Site dates to this period (SEARCH 1997b; Ste. Claire 1989). Ste. Claire (1989) believes that this was an interior hunting camp associated with the coastal populations as opposed to those living along the St. Johns River, some 40 km (25 mi) to the west. A Late Archaic midden (8VO7097) was recorded underneath a historic (Second Spanish) period homesite in New Smyrna Beach (Austin et al. 1999). The Hunter's Creek Site is an aceramic lithic reduction site in Orange County, with the raw materials being obtained from the Tampa Bay, Upper Withlacoochee, and Hillsborough River Quarry Clusters. The site dates from the Late Archaic through the Florida Transitional based upon the recovery of diagnostic tool forms, including Florida Archaic Stemmed, Culbreath, Lafayette, Hernando, Citrus, and Broward points (Stewart 1992). The Tomoka Site (8VO81) consists of nine mounds and a surrounding village midden located near the confluence of the Tomoka and Halifax River. Occupants of this site utilized estuarine and coastal resources as evidenced by extensive use of coquina (coast) and oysters (estuary). No ceramics have been recovered from any of the excavations conducted at this site complex (Douglass 1882; Piatek 1992, 1994).

Aboriginal population mined the stone for their tools at quarry sites. The tools were usually roughly shaped prior to transporting to another locale for finishing. There are, however, no quarry sites known for this part of Florida. Evidence from the Groves' Orange Midden indicates contact, either physically or through trade, with the Tampa Bay and possibly the Suwannee River valley areas (Purdy 1994a). The chert used for the manufacture of the stone tools from the Windover site came from the Lake Panasoffkee Quarry Cluster, some 160 km away (Dickel 2002). The occupants of the Lake Monroe Outlet Midden obtained most of their chert from the Ocala Quarry Cluster in the Marion County locale (ACI/Janus 2001). Other quarry clusters that were utilized include the Brooksville, Gainesville, Lake Panasoffkee, Crystal River, Upper Withlacoochee, Peace River, and Hillsborough River (ACI/Janus 2001; Endonino 2002). Other evidence of trade can be seen in the use of soapstone; this material is imported from north central Georgia, South Carolina, and Virginia (Yates 2000). Sites in Volusia County containing soapstone include Bluffton, Tick Island, Nocoroco, Groves' Orange Midden, Hontoon Island, Mount Oswald Plantation, and the Lake Monroe Outlet Midden (ACI/Janus 2001; Yates 2000). Yates (2000:88) considers that the transportation of the soapstone occurred via watercraft, most likely the canoe. Evidence for canoes from this time period is well documented, and in fact, many of the canoes recovered from Florida waters have dated to the Archaic (<http://dhr.dos.state.fl/canoes> 2001; Newsom and Purdy 1990; Purdy 1988).

The earliest canoe comes from DeLeon Springs, and is roughly 6000 years old (Newsom and Purdy 1990).

By about 2000 B.C., the firing of clay pottery made its appearance in Florida. The first ceramics types used fibers (Spanish moss or palmetto) as the tempering agents within the clay. These wares are referred to as the Orange series. The Orange period was divided into subperiods based on a variety of ceramic attributes (Bullen 1955b, 1972; Milanich 1994). The ceramics lacked decoration until about 1650 B.C. (Subperiod 1). Orange 2 ceramics are occasionally decorated with concentric vertical diamonds with horizontal lines and Tick Island styles that include incised spirals with rare background punctations. Orange 3 has incised straight lines, some parallel and slanting, some punctations or ticks, but no Tick Island types. Orange 4 sees the first use of the coiling techniques of pottery manufactures as well as the introduction of quartz sand with the fiber-temperers. There are simple incised decorative motifs. Orange 5 continues to have sand mixed with the fibers, bowl shaped vessels become more common, and there is some incising, triangular punctuations, and/or side lugs. The introduction of the St. Johns series of ceramics, a chalky feeling ceramic, occurred late in this period. The temporally diagnostic lithic tools of the Late Archaic populations were virtually the same as those utilized during the Middle Archaic period with the inclusion of the Clay, Culbreath, and Lafayette stemmed and corner-notched varieties (Bullen 1975).

Milanich (1994) and Miller (1998) indicate that there is little difference between Middle/Late Archaic and Orange populations except that there are more Orange sites and the density of sites is higher. In a review of the FMSF data for Brevard County in March 2003, there were 16 sites that have Archaic period components as opposed to 53 recorded Orange period components. Orange settlements were primarily located near wetland locales. The abundance of resources located in and near the wetlands permitted larger settlements. This change in settlement patterns may be related to environmental changes resulting from the establishment of current sea levels. By the end of the Middle Archaic, the climate closely resembles that of today's; vegetation changed from those species that preferred moist conditions to pines and mixed forests (Watts and Hansen 1988). Sea levels rose, inundating sites located along the coastal and riverine shorelines (McGee and Wheeler 1994; Ruppé 1988). The adaptation to this environment allowed for a wider variety of resources to be exploited and greater variability in settlement patterns. Shellfish, fish, and other food sources were now available from coastal and freshwater wetlands resulting in an increase in population size.

Coastal sites include Summer Haven (Bullen and Bullen 1961), Crescent Beach (Bond 1992), and Cotton (Griffin and Smith 1954). The Duda Ranch Mound (Knoderer 1972), Mount Taylor (Goggin 1952; Wheeler and Newman 1997), Bluffton (Bullen 1955b; Wheeler and Newman 1997), Tick Island (Goggin 1952; Jahn and Bullen 1978), and Sunday Bluff (Bullen 1969) sites along the St. Johns River date to Orange times. Middle to Late Archaic materials, including Florida Archaic Stemmed and Culbreath points as well as Orange Plain, Incised, and Punctated ceramics, were recovered from the Sligh Site (8SE1332) on the southern shore of Lake Jessup (Dickinson and Wayne 1996). Several sites recorded (8BR82A, -86, -87, -88C, -89, -221, -227, and -231), within the

Cape Canaveral Air Force Station have Orange period components (Bellamo 1996; Cantley et al. 1994a; Cantley et al. 1994b; Deming and Horvath 1999). Sites within the Kennedy Space Center and Merritt Island Wildlife Refuge include 8BR79, -82, -163, -166, -169, -171, -774, and -1619 (ACI 1990, 1991, 1992, 1996; Deming 1992; Griffin and Miller 1978; Long 1967; Smith 1973).

It is possible that winters were spent engaged in hunting and shellfish harvesting on the coast, with movement into the St. Johns River Valley during the warmer summer months (Milanich and Fairbanks 1980). Other evidence, however, suggests that at least some of the sites were being occupied on a year-round basis (Russo 1992; Russo et al. 1993; Russo et al. 1992). Russo and Ste. Claire (1992) suggest that the occupations in these two major environmental locales were, in fact, separate cultural entities, not one group migrating back and forth. Although there is a similarity in ceramic types, settlement and subsistence patterns are quite different between the two (Russo 1988). The Samuel Butts Site (8VO5266) is a "rare example of an interior prehistoric black dirt midden in the Northeast Florida coastal region, an area dominated by shell midden sites" (Ste. Claire 1998:29). The presence of fiber-tempered pottery indicates that the site was first used during the Late Archaic/Orange period. The artifact assemblage recovered indicates a variety of activities, including bone pin and tool manufacture, stone tool manufacturing and/or maintenance, wood-working, cooking, food storage, and the processing of food or other natural materials. This suggests a long-term encampment as opposed to a limited activity hunting camp (Ste. Claire 1998). Ellis and his colleagues (1994) recorded almost 20 freshwater shell midden sites and revisited many of the larger previously recorded shell mounds dating from this time period in Seminole County.

Bridging the close of the Archaic stage and the beginning of the Formative is the Florida Transitional period, circa 1200 to 500 B.C., as defined by Ripley Bullen (1959). Milanich (1994), Miller (1991), Russo et al. (1993), (Shannon 1986), and others suggest that assemblages from this "period" can not be discerned with any accuracy from the preceding or following periods. In general, this time was characterized by increased regionalism, population growth, and socio-cultural complexity (Bullen 1959, 1970). Exploitation of shellfish, fish and wild plants, as well as a reliance on hunting, was continued (Bullen 1959, 1970; Bullen et al. 1978), and limited horticulture may have been engaged in at this time (Milanich and Fairbanks 1980). Russo (1992:114) however, notes that there is no known evidence in this area for horticulture during this time. The Florida Transitional period is identified by the presence of St. Johns Incised ceramics (Bullen 1955b, 1972; Milanich 1994; Miller 1998). Bullen hypothesized that during the Florida Transitional period, the diffusion of culture traits, resulting from the movements of small groups of people, led to the spread of several ceramic and tool traditions (Bullen 1959). "The major changes in post-Transitional cultures cannot be attributed to environmental changes but rather appear to be the result of social, political, religious, and technological innovations introduced from elsewhere in the eastern United States (Miller 1998:76).

In the East and Central Lake region, fiber-tempered pottery was slowly replaced by temperless wares (St. Johns series) and by sand-tempered ceramics. There are roughly a

dozen recorded Transitional period sites in Brevard County, many of which (BR249, -566, -568, -571, -757, -576) were visited and/or recorded as a result of Bense and Phillip's survey of six areas in the county (Bense and Phillips 1990). A few sites within the Cape Canaveral Air Force Station (BR86, 087, 232) also date from this period (Cantley et al. 1994b; Deming and Horvath 1999). Among the sites in Volusia County dating from this time are Bluffton (Bullen 1955b; Wheeler and Newman 1997), and three sites (8VO1219, -1226, -1231) within the Alaquia Lakes PUD (Burger and Stine 1992). A short-term campsite (8SE1684), dating from this period, containing fiber tempered and St. Johns Plain ceramics, was recorded during the survey of the Live Oak Plantation (SEARCH 1997a). In addition, the Lake Jennie Jewel and Zellwood (Bullen et al. 1974) sites in Orange County and the Zabski Site (Atkins and MacMahan 1967; Bullen 1972) on Merritt Island in Brevard County have been attributed to this period. Dickinson and Wayne (1996) report a Transitional period component at the Sligh Site (8SE1332) based upon the recovery of Orange Simple Stamped and St. Johns Incised and Punctated sherds.

3.3 Formative

The period from about 500 B.C. until A.D. 750 in the East and Central Lake region is referred to as St. Johns I, which has been divided into three temporal sub-periods: St. Johns I (500 B.C. - A.D. 100), St. Johns Ia (A.D. 100 - 500), and St. Johns Ib (A.D. 500 - 750) based primarily on characteristic ceramic types (Milanich 1994:247). There are regional variants of this basic cultural tradition: the St. Marys to the north and the Indian River to the south.

The St. Marys Region is located at the mouth of the St. Johns and extends northward into Georgia (Russo 1992). Sites in this area contain a mixture of Georgia ceramics as well as St. Johns ceramics. St. Mary's I is defined, in part, on the presence of a combination of St. Johns I, Deptford, Swift Creek, and Colorinda ceramics while St. Mary's II contains Savannah Cordmarked and St. Johns Check Stamped ceramics, among others (Russo 1992). Ashley and Rolland (2002:25), however, suggests a somewhat different chronology: St. Marys I (500 B.C.-A.D. 900), St. Johns II (A.D. 900-1250) and St. Mary's II (A.D. 1250-1500+). The St. Mary's II period is identified by the presence of St. Marys Cordmarked ceramics (Ashley and Rolland 2002). Although this region was based its subsistence economy on the exploitation of the salt marsh, barrier island, and estuary resources, the cultivation of maize became a part of their subsistence economy around A.D. 1200 (Lee et al. 1984).

At the southern end of the East and Central Region is the Indian River Region which was initially defined by Rouse (1951). There is a much higher prevalence of sand-tempered wares in this region. Malabar I is coeval with St. Johns I and has been sub-divided into Malabar I (500 B.C. - A.D. 100) and Malabar I' (A.D. 100-800). Malabar II occurs at the same time as St. Johns II and both are defined based on the presence of St. Johns Check Stamped pottery. Malabar II has been sub-divided into Malabar IIa (A.D. 800-1300), IIb (1300-1513) and IIC (A.D. 1513-1565) (Bense and Mattick 1994). Cordell's ceramic

analysis has helped to better define the cultural sequences in this more southern area (Cordell 1985).

Settlement patterns during this time were virtually the same as that seen for the earlier Mount Taylor and Orange periods, i.e. along the coastal estuaries and larger rivers. It was during this time, however, a distinctive settlement pattern developed within the Upper St. Johns River basin (Sigler-Eisenberg et al. 1985). Large permanent base camps were established on elevated lands within the marshes. These were situated to allow for ease of access to a wide variety of natural resources and environments. In addition to the base camps, short-term satellite camps were utilized for task specific purposes such as hunting, fishing, and collecting specific resources. The faunal analysis conducted at the Twin Mounds Site (8OR459) along the Wekiva River suggests that there was a slight decrease in the dependence on freshwater shellfish during this period as opposed to the preceding Orange period (Weisman 1993). Based on that analysis, there was an increase in the use of reptilian resources. There was also a tremendous increase in the number of archaeological sites during this time. An apparent trend from St. Johns I through Ib times was a population shift into the northern part of the St. Johns River valley, possibly due to the need for more arable land (Milanich and Fairbanks 1980:158).

Village wares were almost all St. Johns Plain throughout this period. St. Johns Incised is associated with the Early St. Johns I period. Deptford and Swift Creek pottery or copies are occasionally present in St. Johns I and Ia subperiods. St. Johns Cordmarked ceramics are associated with the St. Johns Ia period while Dunns Creek Red is associated with the St. Johns Ia and Ib periods. In her analysis of the ceramics from Shell Midden B (88VO1705) and Shell Mound D (8VO115) at Edgewater Landing, Cordell (Russo et al. 1989b:68) notes that through time, the St. Johns Plain ceramics become sandier due to increased use of quartz sand as an aplastic agent. In the Upper St. Johns River Basin, Cordell divides the Malabar I period into three sub-periods based on the ceramic assemblages that she examined (Cordell 1985). Early Malabar I is denoted by a marked decrease in fiber-tempered ceramics and a marked increase in St. Johns Plain ceramics. Middle Malabar I has an increase in the prevalence of sand-tempered pottery though St. Johns Plain still predominates. The Late Malabar I time frame is noted by the decrease in sand-tempered wares and the predominance of St. Johns Plain ceramics. She notes, however, that additional work needs to be done through additional testing and independent verification through absolute dating of the ceramics or associated materials (Cordell 1985:129).

Evidence of the continuous use of burial mounds begins at this time. Many of the burials were found in large central pits, probably the result of secondary interments. Some changes in the burial practices include the possible use of log tombs during the St. Johns Ia period as well as inclusion of Hopewellian-Yent complex exotic trade items (Milanich 1994:261). Much of the information on St. Johns I period burial practices have been obtained from the Ross Hammock Site in Volusia County (Bullen et al. 1967). This site complex consists of two large burial mounds and an extensive village midden located on the west shore of Mosquito Lagoon. A large polished stone celt was recovered from Mound 1, and this artifact type was reportedly common in Weeden Island burial mounds

on the Florida Gulf Coast (Bullen et al. 1967:16). St. Johns I/Malabar I burial mounds within Brevard County include Grant, Fairlyland, Norris, and Fuller Mound B, among others. The Benton Mound in Flagler County dates to the St. Johns Ia period (Miller 1994). Evidence of the Hopewellian-Yent ceremonial complex includes two clear quartz crystals, Busycon cups, and Alligator Bayou Stamped ceramics. Other ceremonial activities associated with these sites include the “killing” of ceramic pots. Miller (1994:219) describes this as the bottom of the vessel being struck from the outside; the pot broke apart, and some pieces, including the bottom fell to the ground. The remainder of the pot was then possibly thrown a short distance away. The Fiddle Crab Mound is a shell capped sand mound located near Oak Hill. It has been postulated that it may have been a burial mound, but no skeletal materials were recovered (Horvath et al. 1994). Scudder, however, indicates that the phosphate concentrations within the mound were too low to suggest a burial mound and Kozuch suggests that the mound had been used as a bone tool-working loci (Kozuch 1995; Scudder 1995).

Year-round occupation of the coast and along the rivers occurred with special use-activity sites located in other locales and short-term campsites on the coast as well. Excavations at the Sligh Site (8SE1332) and the Lake Jessup South Site (8SE580), located on the south shore of Lake Jessup, suggest that these sites served as villages or long-term encampments (Dickinson and Wayne 1996; Wayne and Dickinson 1993). There was a wide variety of tools and an abundance of ceramics suggesting a relatively sedentary group. Hunting, food preparation and tool making were common site activities. The site pattern “consists of small, probably individual household midden deposits with structural evidence limited to arcs of shallow post holes, often shell-filled, and firepits (Dickinson and Wayne 1996:108).. The Hontoon Island Site (8VO202) located within the St. Johns River southwest of Lake Beresford, has provided a wealth of data due to the preservation of many classes of artifacts within the inundated midden deposits. Evidence of an extensive wood-working tradition is noted by the numerous carved items recovered from the river around the site as well as the debitage remaining from the carving activities (Bullen 1955a; Purdy 1987). The analysis of the faunal and botanical remains suggested that the site was occupied on a year round basis and that most of the resources were collected within 5-10 km (3-6 mi) of the site (Newsom 1987; Wing and McKean 1987). The Gemini Springs Site (8VO4378) is located on an elevated area between Gemini Springs and DeBary Bayou. The midden was made up of pond and apple snail as well as mussel. The vertebrate faunal remains included deer, cooter, soft shell turtle, herring, shad, bowfin, catfish, sunfish, birds, rodents, and snakes. Stone tool manufacture was considered to be a minor site activity (Janus Research 1993).

The survey of the Edgewater Landing tract recorded several shell midden deposits that date to this period (Johnson and Ste. Claire 1988). Excavations conducted at two of the site indicated occupation during the St. Johns Ia (8VO1707) and St. Johns Ib (8VO115) periods. Both sites were characterized as temporary camps established to harvest oysters and hardshell clams, with no evidence being recovered to suggest any agricultural activities. The sites were occupied irregularly throughout the year, but contained evidence indicating that the sites were utilized during all seasons of the year (Russo et al. 1989b). A similar type of site is seen at the Canal Street Site (8VO4365) in New Smyrna

Beach. This shell midden site, located along the North Indian River (Hillsborough River), dates from the St. Johns Ia period with an ephemeral St. Johns II period component as well. The faunal analysis indicated that a wide variety of resources were utilized, but estuarine resources provided the bulk of the diet. Based on the analysis of the coquina, a late winter-early spring occupation was suggested. The relative lack of tools and low artifact count suggest a resource exploitation area as opposed to a long-term occupation locale (Dickinson and Wayne 1993). The Seminole Rest Site is a large quahog clam-processing center located along the west shore of Mosquito Lagoon (Horvath 1995). The faunal analysis indicated that the site was used throughout the year, but did not appear to be occupied on a year-round basis (Quitmyer 1995). Although located along the lagoon's shore, fish made up only a small portion of the diet, less than 15%, and mammals even less (Kozuch 1995). Interestingly, the Oak Hill Midden, located just a half mile south, was composed mostly of oyster as compared to Seminole Rest's predominance of quahog. Kozuch (1995:90) suggests that this may indicate that different clans or families had rights to different shellbeds and this tradition is still seen today (Provancha et al. 1991).

3.4 Mississippian/Acculturative

The St. Johns/Malabar II period has also been sub-divided into three sub-periods: St. Johns IIa (A.D. 750 - 1050), IIb (A.D. 1050 - 1513), and IIc (A.D. 1513 - 1565) / Malabar IIa (A.D. 800-1300), IIb (A.D. 1300-1513) and II c (1513-1565) (Bense and Mattick 1994; Milanich 1994). The St. Johns/Malabar IIc periods are marked by the presence of St. Johns Check Stamped pottery. "St. Johns II carries on the tradition and is marked only by the introduction of check-stamped pottery" (Goggin 1952:70). Within the Malabar IIb period, in addition to the St. Johns Check Stamped pottery, we see the addition of Safety Harbor and Fort Walton trade wares from the Gulf Coast and Panhandle of Florida (Bense and Mattick 1994). In addition, Southeastern Ceremonial Complex status and ritual items are occasionally found within the burial mounds. The inclusion of European items into the Malabar material culture is the marker for sites associated with the Malabar IIc period.

Occupation of riverine and coastal shell middens continued, although Miller (1998:80) notes that there is a relative increase in the number of non-riverine and non-coastal sites, perhaps as the result of locating sites in more agriculturally suited locales. Such sites are quite numerous, suggesting the possibility of an increase in population. Milanich and Fairbanks (1980) suggest that hunting and gathering remained important but the dependence upon cultivated crops such as maize, squash, and gourds increased. The use of gourds as domesticates is still being studied, as there is no evidence for cultivation even though gourds and squashes have been around for thousands of years prior to this period (Newsom et al. 1993).

Sigler-Eisenberg and her colleagues (1985), however, suggest that in the upper St. Johns basin, the practice of horticulture was not adopted. Russo (1984) and Sigler-Eisenberg (1984a) further indicate that the wetland ecology and subsistence strategies were

different. At the Gauthier site, fish and aquatic turtles were the primary subsistence items, with relatively little reliance upon terrestrial game or freshwater shellfish (Sigler-Eisenberg 1984b). Large villages in the St. Johns River marshes continued to be occupied with smaller special-use campsites located away from the base camp. Burial mounds continued to be used and built (Bense and Mattick 1994).

Seasonal utilization of the various coastal resources continued. The species exploited were dependent upon micro-environmental factors such as salinity and hardness of the lagoon bottom. The faunal remains recovered from the Castle Windy site were indicative of a winter occupation (Bullen and Sleight 1959). However, other St. Johns II sites such as Palmer and Fletcher were occupied during the fall (Miller 1980). Piney Point, in Nassau County, was apparently occupied during short spans throughout the year (Hardin and Russo 1987).

There was an increase in the number and size of villages during the St. Johns IIa period suggesting population expansion. A ranked society evolved as evidenced by the differential burial customs. No longer were all people interred in burial mounds. Deagan (1978:109) notes that around A.D. 1000 a population shift from the more southern and southwestern areas into the northern areas is evidenced by changes in relative frequencies of burial mounds in the areas over time. The Thursby Mound on the St. Johns River in Volusia County as well as two smaller habitation sites on the south shore of Lake Mizell in Orange County (Swindell et al. 1977:14), among others, date to this period. Excavations at the Burns, Ormond Beach, and Fuller Mounds A and D, revealed a new burial pattern in that the burials were placed on their backs with their heads or feet pointing toward the center of the mound (Jennings et al. 1957; Willey 1954)

The St. Johns IIb period is characterized by the adoption of some Mississippian traits into the ceremonial system as well as the presence of St. Johns Simple Stamped ceramics. The Mississippian lifestyle, however, never became dominant, possibly because the soils were not suitable for full agricultural pursuits. A more complex socio-political organization is suggested by the presence of platform mounds at the ceremonial centers. These include the Shields Mound, Mount Royal, and the Thursby Mound, all of which were excavated by C. B. Moore (Moore 1894a, 1894b). Copper beads and ornaments as well as greenstone celts have been recovered from several sites and suggest contact with cultures to the north and northwest of Florida.

The St. Johns/Malabar IIc period is marked by the introduction of European artifacts in some of the mounds. The historic aboriginal occupants of the region were the Timucua, Mayaca, and the Ais. The Timucuans shared a common language but cannot be considered as a specific cultural group because the range of the Timucuan speakers "... was crosscut by dialect, techno-environmental, ceremonial, political and geographical differences" (Deagan 1978:89). The Agua Dulce (Freshwater) Tribe of the Timucua occupied the upper reaches of the St. Johns River and coastal lagoon south of St. Augustine (Deagan 1978). The Mayaca were located in eastern Lake, western Volusia, and Seminole counties. Although these Indians apparently continued the St. Johns tradition, they did not share the same Timucuan language as many of the other St. Johns

historic counterparts (Milanich 1995). The Ais are located further south, from around Cape Canaveral south to Fort Pierce, extending inward to the St. Johns River in Brevard County (Milanich 1996). A major difference between the Timucua and the Ais is that the former, especially in north Florida, based a good percentage of their subsistence economy on cultigens whereas the Ais did not. The utilization of the coastal resources, however, was the same for both groups. They shared the same basic material culture and cultural practices including the St. Johns ceramic series, burial mounds, and diffuse shell middens. Excavations at Hontoon Island suggest that these people pursued a hunting-gathering-fishing economy without any major agricultural pursuits (Newsom 1987).

The Oyster Bay Site is a coastal shell midden that contains evidence of the Ribault Fleet shipwrecks that occurred in 1562 (Armstrong 1996; Brewer and Horvath 2002). A basic hunting-fishing-gathering subsistence economy was in place, though the higher prevalence of sea gull remains is believed to represent the arrival of the French, as these resources are not often encountered in other coastal middens (Brewer and Horvath 2002). Though there were, however, several sea gull bones recovered from the St. Johns II component of the Green Mound (Bullen and Sleight 1960). The Butler-Campbell Mound in Volusia County had evidence of European contact in the form of a Bellarmine jar fragment (Deming 1992:22). Spanish influence in the area is seen at the Riverbend Site (8VO2567) located near Ormond Beach. This site is an artifact scatter with a midden deposit. Spanish artifacts and burned corncobs were recovered. Corn also has been recovered from Hontoon Island, Mount Royal, and St. Augustine. The cultural materials recovered from the Riverbend Site suggest that it was occupied throughout the year and that the Timucuan and Guale (from Georgia) Indians interacted with each other, and both may have lived at the site (Russo et al. 1989a).

The arrival of the Europeans in the 1500s began a period of extensive social and cultural upheaval. Many of the traditional ways of life were destroyed or abandoned. Warfare and European diseases brought an end to the aboriginal inhabitants and their cultures. Due to the attempts of the Spanish military and missionaries to alter the traditional lifeways, by the end of the seventeenth century these aboriginal populations were virtually extinct. Raids in the early eighteenth century by Indian groups allied with the English drove many of the Mayaca and Timucuans to seek refuge near St. Augustine where most perished in warfare or because of epidemics (Hann 1993:133; Milanich 1995). By the first half of the 18th century, the native populations had all but vanished (Neill 1968), and groups of Creek Indians, who came to be known as Seminoles, moved into Florida. What few Timucua survived were transported to Cuba with the Spaniards of St. Augustine when Spain surrendered to Britain (Hann 1993:324).

Archaeologically, Seminole sites are poorly understood. In the East and Central Lake region, Seminole artifacts have been recovered from the Mizell site (8OR14) in Orange County. The Peyton Site (8SE95) has also been attributed to this period. Over 200 black glass beads and lithic debitage was reported from the Celery Avenue Site (8SE1308) just west of the project area (Ellis et al. 1994). The presence of Fort Mellon, and Fort Read to the south, Second Seminole War fortifications south of Lake Monroe, may suggest that other Seminole sites may be in the vicinity as well.

4.0 HISTORICAL OVERVIEW

The cultural traditions of the native Floridians ended with the advent of European expeditions to the New World. The initial events, authorized by the Spanish Crown in the 1500s, ushered in devastating European contact. After Ponce de Leon's landing near St. Augustine in 1513, Spanish explorations were confined along the west coast of Florida (Narvaéz in 1528; deSoto in 1539) and European contact along the east coast was left to a few shipwrecked sailors from treasure ships which, by 1551, sailed through the Straits of Florida on their way to Spain. Cape Canaveral was a landmark for these early explorers and sailors. The Spanish gave Cape Canaveral its name, meaning place of cane or reeds in obvious reference to the sea oats that abound there. Another landmark, the St. Johns River, prompted the French to establish Fort Caroline, near today's Jacksonville, to promote their interests in the New World. The need to protect the treasure galleons led Spain to remove the French from the region. Pedro Menéndez de Avilés led the Spanish fleet in its conquest of Fort Caroline and the destruction of the French fleet during the hurricane which raged at the same time. The majority of the Frenchmen that survived the ship wrecks were killed by Menéndez (Barcia [Carballido y Zúñiga] 1951; Barrientos 1965; Lowery 1959; Lyon 1988), though a couple hundred were returned to Cuba for ransom, and 20 others decided that they "would rather be devoured by Indians than surrender to the Spaniards" (Barrientos 1965:71).

Menéndez then proceeded southward, passing a number of villages from which the Indian inhabitants had fled. He left mirrors, knives, scissors, and bells as a sign of good will and received hospitality and food in return from the Ais who lived near the Indian River inlet (Barcia [Carballido y Zúñiga] 1951). Menéndez remained four days arranging for 200 of his men under Juan Velez de Medrano to settle nearby while he continued to Havana for supplies and to turn over the French prisoners. However, upon his departure, the Ais attacked the soldiers, and Medrano moved the survivors to the southern end of the Indian River where the more friendly Guacata Indians, and a better supply of food, could be found. He named the new settlement Santa Lucia, or St. Lucie (Barrientos 1965).

During Spain's first period of occupancy (1656-1763), it failed to establish permanent settlements in the project area. Located on the fringe of Spanish activity centered in St. Augustine, Brevard County was too far removed for Spain to exert political control (Milanich and Fairbanks 1980). From the 1570s into the 1700s, there are references to Spanish contact with the Ais (Rouse 1951:50-56). However, the most important description of the Ais in the 17th century was reported by Jonathan Dickinson who, with his family and other members of his party, was shipwrecked in September 1696 while en route from Port Royal, Jamaica to Philadelphia. The group walked from the coast of the Jaega territory, located south of the Ais, northward to St. Augustine. Although the party spent only a brief time among the Indians, Dickinson left a vivid account of the Ais appearance, dress, subsistence, ceremonies, and other customs.

By the early 1700s, the native populations were largely wiped out – ravaged by conquest, disease, and the typical effects of European contact. The area which now constitutes the

state of Florida was ceded to England in 1763 after two centuries of Spanish possession. England governed Florida until 1783 when the Treaty of Paris returned Florida to Spain; however, Spanish influence was nominal during this second period of ownership. Prior to the American colonial settlement of Florida, portions of the Creek Nation and remnants of other Indian groups from Alabama, Georgia, and South Carolina moved into Florida and began to repopulate the vacuum created by the decimation of the aboriginal inhabitants. The Seminoles, as these migrating groups of Indians became known, formed at various times, loose confederacies for mutual protection against the new American Nation to the north (Tebeau 1980:72). One such attack in 1703 extended as far south as the Ais territory at the headwaters of the St. Johns River (Fairbanks 1871:179, in Rouse 1951). Adair (1930:489, in Rouse 1951) records a band of Creek Indians on a raid into south Florida who traveled up the St. Johns River to its headwaters and portages through Ais territory to the Indian River.

The bloody conflict between the Americans and the Seminoles over Florida first came to a head in 1818, and was subsequently known as the First Seminole War. As a result of the war and the Adams-Onís Treaty of 1819, Florida became a United States Territory in 1821. Andrew Jackson, named provisional governor, divided the territory into St. Johns and Escambia Counties. At that time, St. Johns County included the lands lying east of the Suwannee River. In the first territorial census (1825), 5077 people were reported within St. Johns County, and by 1830, that number had risen to 8956 (Tebeau 1980:134).

Even though the First Seminole War was fought in north Florida, the Treaty of Moultrie Creek in 1823, at the end of the war, was to affect the settlement of all of Florida. The Seminoles relinquished their claim to the whole peninsula in return for occupancy of an approximately four million acre reservation south of Ocala and north of Charlotte Harbor (Mahon 1967:46-50). The treaty never satisfied the Indians or the Anglo-Americans. The inadequacy of the reservation and desperate situation of the Seminoles living there, plus the mounting demand of the Anglo-Americans for their removal, soon produced another conflict.

By 1835, the Second Seminole War was underway. Mosquito County, which encompassed present day Brevard County, was sparsely occupied with mostly sugar plantations along the rivers near the coast. Seminoles ransacked or torched sixteen of these plantations on the northern Mosquito Lagoon by January 1836 (Eriksen 1994:36). The commanding general, Thomas Jessup, launched a plan to surround the Seminoles within the Everglades. From northern Mosquito County, he ordered four main columns to form a staggered front to begin marching south. Fort Ann, Fort Pierce, Fort Taylor, Fort Christmas, and Fort Basinger were a few of the forts established during this period on the eastern side of the peninsula. Although most of the fighting occurred around the Kissimmee River and Everglades areas, sporadic outbreaks of violence erupted throughout central and south Florida. The Second Seminole War lasted until 1842 when the federal government decided to end the conflict by withdrawing troops from Florida. Some of the battle-weary Seminoles were persuaded to migrate west where the government had set aside land for Native American occupation. However, those who were adamant about remaining were allowed to do so, but were pushed further south into

the Everglades and Big Cypress Swamp. This area became the last stronghold for the Seminoles. The surveys and maps of the Florida peninsula and the establishment of improvements such as trails and forts resulting from the war provided invaluable assistance in the settlement of Florida (Eriksen 1994:36-42; Mahon 1967:321; Shofner 1995:38-43).

Encouraged by the passage of the Armed Occupation Act in 1842, which was designed to promote settlement and protect the Florida frontier, Anglo-American pioneers and their families move south throughout Florida. The Act made available 200,000 acres outside of the already developed regions south of Gainesville to the Peace River, barring coastal lands and those within two miles of a fort. The Armed Occupation Act stipulated that any family or single man over 18 years of age able to bear arms could earn title to 160 acres by erecting a habitable dwelling, cultivating at least five acres of land, and living on it for five years. During the nine month period the law was in effect, 1184 permits were issued, totaling some 189,400 acres (Covington 1961:48; Dunn 1989:24-25). Prospective settlers filed 112 patents for land along the Indian River between Merritt Island and Lake Worth. These settlements collectively received the name of the Indian River Colony (Shofner 1995:45).

In 1845, the Union admitted the State of Florida with Tallahassee as the capital. It was around this time that the U.S. Government began land surveys in the project area. In 1844, A. H. Jones surveyed the Range line between Ranges 36 and 37 East, and in 1859, W. S. Harris conducted the survey of the section lines (State of Florida 1844, 1859a, 1859b, 1859c). The project sections were described as containing areas of 2nd rate pine, 1st rate hammock, palm glades, pines, savannas, and palmetto scrub (State of Florida 1844, 1859a). There were no historic features such as trails, roads, homesteads, Indian field, or forts depicted anywhere near the project areas (State of Florida 1859b, 1859c).

In 1844, the territorial government had reduced Mosquito County and renamed it Orange County. The following year, Brevard County was carved from it and named St. Lucie County. In 1855, St. Lucie was renamed Brevard and the area was reduced in size again. Repeated boundary adjustments granted portions of Brevard County to Polk, Orange, Dade, and Manatee Counties throughout the next 20 years. In 1879, the southern part of Volusia County, which included Titusville, transferred to Brevard. At that time, the county stretched from the head of the Indian River to Jupiter on the south and west to Fort Drum. In 1877, the western portion shifted to Osceola County and, in 1905, the southern section lobbied for their own county which was granted and named St. Lucie. Finally, in 1959, the last adjustment to the boundaries of Brevard transferred the area south of Sebastian Inlet to Indian River County (Shofner 1995:11-12).

Throughout the intervening years between the Second and Third Seminole Wars, tensions erupted periodically between the settlers and the Seminoles. For example, in 1849, a renegade group of Seminoles attacked the Indian River Colony. As a result, the remaining settlers abandoned their land to flee to the safety of St. Augustine (Shofner 1995:52). Then, in December 1855, the Third Seminole War, or Billy Bowlegs War, started as a result of pressure placed on the Native American remaining in Florida to

move west (Covington 1982). The war started in present day Collier County when Seminole Chief Holatter-Mico, Billy Bowlegs, and 30 warriors attacked an army camp, killing four soldiers and wounding four others. The attack was in retaliation for damage done to banana plants belonging to Billy Bowlegs by artillerymen. This hostile action renewed state and federal interest in the final elimination of the Seminoles from Florida. As a result, several regional military posts were established (Tebeau 1966).

Military action was not decisive during the war; therefore, in 1858, the U.S. Government resorted to monetary persuasion to induce the remaining of Seminoles to migrate west. Chief Billy Bowlegs accepted \$5000 for himself, \$2500 for his lost cattle, each warrior received \$500, and \$100 was given to each woman and child. On May 4, 1858, the ship Grey Cloud set sail from Fort Myers with 38 Seminoles warriors and 85 Seminole women and children. Stopping at Egmont Key, 41 captives and a Seminole woman guide were added to the group. This made a total of 165 Seminole migrating west. On May 8, 1858, the Third Seminole War was declared officially over (Covington 1982:78-80).

The 1860 Census counted only 267 individuals living in Brevard County. Most of the settlers in the Indian River area grew subsistence crops, but according to the census taker, no individual or firm yielded any product which valued over \$500 per year. Cattle ranching composed the largest industry in the county; 39 people owned cattle with five of those owning more than 3000 head (Shofner 1995:65-66). The lone exception was Douglas Dummett who settled on the southern end of Mosquito Lagoon. He "discovered" a large number of orange trees along the coast and river and started grafting and cultivating groves. The trees which he found were wild trees resulting from the Spanish exploration of the coast. Each Spanish soldier and sailor was required to carry 100 orange seeds to the New World because the fruit was thought to cure many illnesses. Those seeds, left during exploration and shipwreck, grew into the wild groves. By 1865, Dummett was famous for his "Indian River" oranges (Eriksen 1994:31-33).

In 1861, Florida followed South Carolina's lead and seceded from the Union in the prelude to the Civil War. Florida had much at stake in this war, as evidenced in a report released from Tallahassee in June, 1861. It listed the value of land in Florida's 35 counties as \$35,127,721 and the value of slaves in the state at \$29,024,513 (Dunn 1989:59). While the coast of Florida experienced a naval blockade during the war, the interior of the state saw very little military action. One of the major contributions of the state to the war effort was in the supplying of beef to the Confederate Government. The Confederate Government estimated that three-fourths of the cattle which Florida supplied to the Confederacy originated from Brevard and Manatee counties (Shofner 1995:72). The war lasted until 1865 when General Robert E. Lee surrendered to General Ulysses S. Grant at Appomattox Courthouse in Virginia.

Immediately following the war, the South underwent a period of "Reconstruction" to prepare the Confederate States for readmission to the Union. The program was administered by the US Congress, and on July 25, 1868, Florida officially returned to the Union (Tebeau 1980:251). It was not until the 1870s, when a wooden tramway was built from Lake Harney to Titusville, that any great influx into the project area became feasible

(Rouse 1951:61). "The region was beginning to produce oranges and other fruits, shellfish, vegetables, venison, and hides for shipment north to Jacksonville via the river routes" (Rouse 1951:61).

During the Reconstruction period, Florida's financial crisis, born of pre-war railroad bonded indebtedness, led Governor William Bloxham to search for a buyer for an immense amount of state lands. Bloxham's wish was to raise adequate capital in one sale to free from litigation the remainder of state lands for desperately needed revenue. In 1881, Hamilton Disston, a Philadelphia investor and friend of Governor Bloxham, purchased four million acres from the State of Florida to clear the state's debt. This transaction, which became known as the Disston Purchase, enabled the distribution of large land subsidies to railroad companies, inducing them to begin extensive construction programs for new lines throughout the state. Hamilton Disston and the railroad companies, in turn, sold smaller parcels of land to developers and private investors.

By 1880, 1497 individuals resided in Brevard County. The Civil War stimulated growth in the Indian River area in two ways: many Southerners sought new homes to escape the unrest in the neighboring ex-Confederate states, and the war brought prosperity to a large number of Northerners who sought vacation homes in the warmer climates (Shofner 1995:83). After 1879, the county contained fewer cattlemen while the citrus, pineapple, and vegetable industries developed rapidly between the Indian and St. Johns Rivers. During the years after the Civil War, many settlements along the Indian River developed into towns. These included Titusville, which was named the County Seat in 1880, Cocoa, Melbourne, and Eau Gallie.

In the 1870s and 1880s, many communities along the river established post offices. The Courtenay (originally spelled Courtney) post office was established on March 8, 1886 (Bradbury and Hallock 1962:19). The first postmaster was Milledge B. Sams, a dentist who had recently come from South Carolina (Shofner 1995a:139). By the mid-1880s, Courtenay had a community house, a school, and the first Episcopal church on Merritt Island (Shofner 1995a:139). The 1885 population of Courtenay was about 50. According to an 1880s chart of the Indian River area, prepared by Captain John Andrew Bostrom (Eriksen 1994:91), Courtenay was one of only three communities on Merritt Island at this time. Indianola to the south, and Wilson to the north, were the other towns. In general, during the late 1880s, the settlers of Merritt Island almost all had a garden for food. The people grew and shipped beans, tomatoes, cabbage, cucumbers, eggplants, onions, watermelons, guavas, and bananas (Shofner 1995a:186).

Improvements in transportation played a major role in fostering growth within the area. By the early 1880s, steamboats regularly serviced the Indian River communities. Northern visitors could enter Florida by train to Jacksonville and then board a steamer that carried them to the shores of Lake Poinsett. From there, they traveled to Rockledge by wagon, where they could continue south on the Indian River (Shofner 1995:97-100).

In 1886, the Atlantic Coast, St. Johns, and Indian River Railroad ran a spur from Enterprise to Titusville, bringing rail service to the area. Shortly thereafter, the line was

leased to the Jacksonville, Tampa, and Key West Railroad (JTKW). By 1892, the JTKW entered receivership while Henry M. Flagler busily extended his railroad south to the Indian River area. Flagler, a partner with John D. Rockefeller in Standard Oil, visited Florida in 1878, and decided to build a hotel in St. Augustine and a railroad which stretched the length of the east coast of Florida. His railroad entered Titusville in December 1892 and continued down the length of the county in the following year to span the entire 70 mile length of the county by March 1894 (Eriksen 1994:127; Shofner 1995:106-113). The railroad had an immediate impact on the entire Indian River region. It allowed for the rapid entry of tourists and permanent settlers while facilitating the export of products to northern markets. The railroad also helped to foster the growth of businesses directly and indirectly associated with the tourist and fruit industries such as ice plants, packing houses, and canneries (Shofner 1995:106-113).

In 1881, a survey reported that 204 orange groves along the Indian River produced 14,000 boxes that year (Shofner 1995:180). Although the orange industry suffered from a freeze in 1886, and repeated freezes during the 1894-95 season, area groves rebounded. Indian River oranges became famous nationwide and brought from fifty cents to one dollar per box over other brands in the northern markets. Because of this popularity, some growers were marketing their own fruit under fraudulent Indian River labels. To protect their reputation and trademark, orange growers in the areas formed the Indian River Orange Growers Association in 1892 (Shofner 1995:182). Of the 3,000,000 boxes of fruit produced in 1890 in Florida, 60,000 came from the Indian River region (Tebeau 1980). Other industries, such as commercial fishing, lumbering, naval store production, and pineapple and vegetable farming, continued to develop as well.

The turn of the century prompted optimism and excitement over growth and development. With increased financial resources and machinery, extensive reaches of the county's lands were now available for development. In most cases, the land required intensive drainage for agricultural development and settlement. Drainage systems reclaimed for settlement large sections of swamp land between Melbourne and Vero Beach, and led to an improved road system and an increasing population. Two large developments, Roseland Park and Fellsmere Farms, started in the 1890s. Both developments were responsible for draining much of the wetlands in Brevard County. Fellsmere Farms, located in the southern part of the county, was one of the largest and most comprehensive privately-funded reclamation projects in Florida. Along with the Indian River Farms Company in Vero Beach and the Palm Beach Farms Company, Fellsmere Farms was responsible for draining large areas of Florida's East Coast (Shofner 1995:241-242).

The first twenty years of the new century witnessed the advent of progressivism in which governments expanded their services beyond traditional limits of the previous century. During this time the automobile, telephone, and electricity transformed Brevard County from isolation into a county linked with the rest of the state and the nation. Two roads significantly opened up the communities along the Indian River: Dixie Highway and Cheney Highway. Dixie Highway, completed through Brevard County in September 1916, eventually linked Chicago and Miami. By late September, newspapers described

the tourist traffic as “very brisk” and 50 to 60 automobiles every day (Shofner 1995:227-228). Cheney Highway, today’s State Road 50, linked the Indian River area with Orlando. It was started in 1916 and eventually completed in 1925 (Eriksen 1994:168; Shofner 1995:228). In 1916, the American Telephone and Telegraph Company obtained a franchise to operate in Titusville, Miami, and Key West, providing the first significant long distance service (Shofner 1995:229). Around this time, at Orsino, the Blue Hammock Civic Association was advertising for settlers (Shofner 1995a:249). In 1917, the first bridge to span the Indian River was constructed. This Cocoa to Merritt Island bridge, located south of Courtenay, provided a link to numerous communities on Merritt Island and to the “little resort” of Cocoa Beach (Eriksen 1994:153). Thus, by the end of WWI in 1919, Brevard County was prepared for the boom of the 1920s.

The boom which originated in the 1910s exploded in the 1920s. By 1920, the county population numbered over 8500, a 90% increase over the 4717 residents of 1910. Much of the development in Brevard County during the 1920s occurred in and around Cocoa. Several reasons prompted the boom, including the mild winters, the growing number of tourists, and larger use of the automobile, the completion of roads, the prosperity of the 1920s, and the promise by the state legislature never to pass state income or inheritance taxes. Dixie Highway, now US 1, stretched the length of the east coast and was rebuilt in Brevard County in 1923. Other improvements included the construction of bridges across the Indian River which provided easy access to the beaches (Eriksen 1994:164-168). It was around this time that most of the project area was first purchased by individuals (Table 4.1) (State of Florida 1912, n.d.-a, n.d.-b).

Table 4.1. Track Book Entries for the Three Parcels.

T23S R36E S1 (Alternative 1)		
N ½ of SE ¼	Orsino T. Smith	2/16/1917
S ½ of SE ¼	Edward J. McGrath	9/29/1917
T23S R36E S12 (Alternative 1)		
N ½ & SE ¼ of NE ¼ and NE ¼ of SE ¼	Benjamin James Owensby	11/30/1885
S ½ & NW ¼ of SE ¼ and SW ¼ of NE ¼	Catherine D. Sams	8/15/1890
T23S R37E S6 (SERPL Expansion Site)		
Lot 9	Heinrich Dombrock	12/5/1921
Lots 14&15	Orsino Smith	2/16/1917
T23S R37E S18 (Alternative 2)		
NE ¼	Albert A. M. Poe	7/19/1922
NW ¼	Edward Wright Taylor	11/4/1926
W ½ of SW ¼	Walter E. Sams	5/24/1918
E ½ of SW ¼ and N ½ of SE ¼	Carroll H. King	6/7/1923
S ½ of SE ¼	Andy F. Swanson	8/14/1922

Lands within today's ISRP Alternative 1 (Sections 1 and 12) were originally purchased between 1885 and 1917 by Benjamin James Owensby (160 acres), Catherine D. Sams (160 acres), Orsino T. Smith (80 acres), and Edward J. McGrath (80 acres). Historical research did not reveal any information about Owensby or McGrath. The 1900 U.S. Census lists Catherine D. Sams as a 45 year old white female, who resided with brothers J.H. Sams (age 40) and William Sams (age 50). Local histories (cf., Eriksen 1994; Shofner 1995) indicate that many members of the Sams family were among the original settlers of Courtenay. The 1920 U.S. Census lists Orsino T. Smith, who purchased acreage in 1917, as a 49 year old, divorced, white male, who owned a farm, free of mortgage. He was born in Missouri; both his parents were born in Kentucky. In the 1930 Census, Smith is listed as an orange grove farmer, and a veteran. He died in Pinellas County in 1939, according to the Florida Death Index for 1939. Interestingly, Smith is not mentioned in any of the local histories, and it is not known whether the town of Orsino was named after him. According to the tract book records, Smith did not purchase any other lands in the vicinity, including sections to the north where the Orsino community is sited.

Smith also purchased two lots in Section 6, which is the location of the SERPL Expansion site. It is possible that he made his residence here, and raised citrus within his other holdings. Henrich Dombrock was a neighbor of Smith, who purchased one lot in Section 6 on December 5, 1921. The 1920 U.S. Census lists Dombrock as a 58 year old married, white farmer who immigrated to the U.S. in 1879 at the age of 17. In 1893, when he was 31 years old, Dombrock became a naturalized citizen. Like Smith, he owned his farm free of mortgage. In the 1930 U.S. Census, he is listed with his 72 year old wife Sophie, a native of Austria and U.S. citizen. Dombrock's occupation is noted as orange grove farmer.

Lands within today's ISRP Alternative 2 (Section 18) were purchased in 80 acre and 160 acre parcels between 1918 and 1926 by five individuals – Albert A.M. Poe (160 acres), Edward Wright Taylor (160 acres), Walter E. Sams (80 acres), Carroll H. King (160 acres), and Andy F. Swanson (80 acres). All but King are listed in the 1920 U.S. Census. At this time, Poe is listed as a 57 year old white farmer from Tennessee; Taylor, a 56 year old single, white farmer from Minnesota; Swanson a 29 year old single, white farmer from New York, and Sams, a 36 year old, married, white farmer born in Florida. All were self-supporting general or citrus fruit farmers. In general, the 1920 U.S. Census for Precinct 15 (Courtenay) indicates that most residents of the general were, likewise, self-supporting general and citrus farmers. Many of the families, including the Sams, originated from South Carolina. Also in the area were farmers from Italy, including members of the Furnari and Garofalo families. Few native Floridians were landowners in the general area.

The citrus industry on Merritt Island was well established by 1920. According to historian Jerrell Shofner, Orsino growers were obliged to put a crew of men on the roads in 1920 in order to ship "a bumper crop of citrus" (Shofner 1995:231). Several local crate and box mills manufactured containers for crops. In the late 1920s, U.S. Senator Park

Trammell purchased the Happy Alligator orange and grapefruit grove at Courtenay (Shofner 1995a:231).

By 1926-27, the bottom fell out of the Florida real estate market. Massive freight car congestion from hundreds of loaded cars sitting in railroad yards caused the Florida East Coast Railway to embargo all but perishable goods in August of 1925 (Curl 1986:84-84). The embargo spread to other railroads throughout the state, and, as a result, most construction halted. The 1926 real estate economy was based upon such wild land speculation that banks could not keep track of loans or property values (Eriksen 1994:172). By October, rumors were rampant in northern newspapers concerning fraudulent practices in the real estate market in south Florida. To counteract the reports, T. Coleman du Pont, chairman of the Mizner Development Corporation of Palm Beach County, held an open meeting to try and convince the public that the increase in property values represented real worth. However, the next week du Pont and several other board members resigned in a public letter to the New York Times. Du Pont had brought stability to the Corporation, which was undertaking the development of Boca Raton in Palm Beach County. After the public letter, confidence in the Florida real estate market quickly diminished, investors could not sell lots, and the Great Depression hit Florida earlier than the rest of the nation (Curl 1986:84-84).

To make the situation even worse, two hurricanes hit south Florida in 1926 and 1928. Neither hurricane caused much damage to Brevard County, but they destroyed confidence in Florida as a tropical paradise and created a flood of refugees fleeing northward. Soon after, the collapse of the Florida Land Boom, the October 1929 stock market crash, and the onset of the Great Depression left the Brevard area in a state of stagnation. Residents managed to survive on fish, oranges, deer, and turtles. On March 31, 1930, the Courtenay post office was discontinued; mail now went to Cocoa (Bradbury and Hallock 1962:19). By the mid-1930s, federal programs, implemented by the Roosevelt administration, started employing large numbers of construction workers, helping to revive the economy of the state. The programs were instrumental in the construction of parks, bridges, and public buildings. In Brevard County, some of these projects included the construction of the Melbourne Airport, the Intercoastal Waterway, the repairing of schools, paving roads, and the preparation of detailed maps of the county (Eriksen 1994:181-190).

By 1938, recovery from the Great Depression was imminent with the population of Brevard County approaching 16,000 in 1940, an increase from 13,283 in 1930 (Eriksen 1994:186-189). Development which would irreversibly alter the county was beginning. However, the land now proposed for construction of the ISRP, situated between the towns of Courtenay at the south and Orsino at the north, remained largely unaffected. As described by the Federal Writers' Project in 1939, traveling east from Titusville along SR 119, then to SR 219, a short wooden bridge across the Banana River connected the peninsula with Merritt Island. "Its northern section is somewhat desolate and sandy, but stands of Caribbean pine and small farms appear as the road proceeds southward. Almost all the islanders are engaged in vegetable farming and citrus culture" (Federal Writer's Project 1939:345). The population of Orsino was about 100 in 1939. This settlement,

described as the “northernmost trading center on the island,” had a store, post office (established on October 5, 1915), filling station, and church (Federal Writers’ Project 1939:345). Courtenay, about seven miles to the south, had a population of 60. It was described as: “A settlement that seems a part of the dark enveloping jungle,” with “old orange trees occupying almost all space between its weathered frame stores and houses” (Federal Writers Project 1939:345).

Two months after Hitler invaded Austria in March 1938, Congress passed the Naval Expansion Act, established the Hepburn Board, and charged it with determining sites for future naval expansion. In March 1939, the Board chose the peninsula below Cocoa Beach as the site for the Banana River Naval Air Station. With the new air station, improved roadways and bridges became top priority for the county. The base opened in 1940, and the first plane landed in 1941. The incoming servicemen renewed the area economy. In 1941, a new concrete bridge and causeway was completed, connecting Cocoa to Merritt Island over the Banana River (Eriksen 1994:193). During the following year, the federal government spent \$8 million on defense-related projects in Brevard County (Eriksen 1994:190-196). When the war ended in 1945, the population of the county numbered 19,000, not including 500 military personnel (Eriksen 1994:200).

As World War II ended, the military presence in the county decreased. Bases were generally closed or maintained by the skeleton crew. One such station, the Banana River Air Station, which had started the influx, was transferred to the Air Force in 1948 (Eriksen 1994:205). Largely, the post WW II development of Brevard County is similar to that of the rest of America: increasing numbers of automobiles and asphalt, an interstate highway system, suburban sprawl, and strip development along major state highways. The county, like most of Florida, experienced a population boom in the 1950s. Florida’s population increased from 1,897,414 to 2,771,305 from 1949 to 1950 (Tebeau 1980:431).

The 1950 census numbers the residents of Brevard County at 26,400, an increase of over 10,000 from 1940 (Eriksen 1994:200, 228). After the war, car ownership increased, making the American public more mobile, making vacations more inexpensive and easier. Many who had served at Florida’s military bases during WW II also returned with their families to live. As veterans returned, the trend in new housing focused on the development of small tract homes in new subdivisions. In Brevard County, many of these subdivisions were built on dredged lands (Eriksen 1994:213-214).

The economy diversified with the war to provide goods to the military and services to personnel. Since the 1880s, many residents in southern Brevard County expressed frustration that Titusville remained the county seat. Discussion about moving the county offices continued until branch courthouses were suggested in 1955 and became a reality in the late 1950s (Eriksen 1994:227). An evidence of the economic diversification was the final completion of Port Canaveral in November 1953 through which mostly petroleum and cement were transported (Eriksen 1994:219). However, the economy relied increasingly upon the former Banana River Air Force Station, remained Cape Canaveral Air Force Station (CCAFS), and later upon the Kennedy Space Center (KSC).

In October 1949, President Harry S. Truman established the Joint Long Range Proving Ground at CCAFS (NASA n.d.:5). The Cape was ideal for testing missiles. Virtually uninhabited, it enabled personnel to inspect, fuel, and launch missiles without danger to nearby communities. The area's climate also permitted year-round operation. The first launch from the Cape was conducted by a military-civilian team on July 24, 1950 (NASA n.d.:5). By the late 1950s, the military services had elevated their sights from missile testing to launching artificial satellites. On January 31, 1958, America's first satellite – Explorer I – was launched from Cape Canaveral by a military-civilian team of the Army's missile Firing Laboratory (MFL). This group, under the direction of Kurt H. Debus, later formed the nucleus of the KSC (NASA n.d.:6).

With the creation of the National Aeronautics and Space Administration (NASA) in October 1958, the nation turned its attention to the peaceful exploration of space. NASA became a resident of the Cape in 1959 when the MFL was transferred to NASA and renamed the Launch Operations Directorate (LOD). Several facilities at CCAFS were given to NASA, including Launch Complexes 5, 6, 26, 34, and various offices, and hangers (NASA 1992:3.1).

When President Kennedy initiated the Man-to-the-Moon project, CCAFS land was insufficient to house further rocket facilities. New land was required to support the expanded launch structures. Merritt Island, an undeveloped area west and north of the Cape, was selected for acquisition, and in 1961 the Merritt Island Launch Area (MILA) was born (NASA 1992:3.1). In 1962, NASA KSC was authorized by Congress to purchase 125 square miles of property. The U.S. Army Corps of Engineers acted as agent for purchasing land, which took place between 1962 and 1964. NASA KSC began gaining title to the land in late 1962, taking over 83,900 acres by outright purchase. The purchase of land included several small towns (Orsino, Wilson, Heath and Audubon), and many farms, citrus groves, and several fish camps. Some of the buildings were moved at NASA expense to new locations, while others were abandoned in place; a few dozen buildings were given to the Brevard County schools to be used as temporary classrooms (Shofner 1995b:169). A photograph included in the web site "Ghost Towns" (<http://www.ghosttowns.com/states/fl/fl.html>) shows the home of Roy Roberts, former Sheriff of Brevard County, being moved from the Orsino town site at the intersection of SR 405 and old AIA (now SR 3). For the citrus groves, five-year leases were negotiated to run through June 1968, with an option for renewal for another five years (Shofner 1995b:170).

In 1963, sand from the bottom of the Banana River was dredged and used to build a causeway for the Orsino causeway between KSC and the mainland. Now called the NASA Causeway, construction was completed in 1966 (Shofner 1995b:196).

The American program to put a man in space and land on the moon now proceeded rapidly. As LOD responsibilities grew, NASA granted the launch team increased status by elevating LOD to independent status in July 1962 and renamed it the Launch Operations Center (LOC). In 1963, LOC and MILA were named the John F. Kennedy Space Center to honor the late president (Butowsky 1981:5). The manned space program,

initiated in 1958, was executed in less than five years. Begun in 1964, Project Gemini was the intermediate step toward achieving a manned lunar landing, bridging the gap between the short-duration Mercury flights and the long-duration mission proposed for the Apollo program (Butowsky 1981:5). Apollo, the largest and most ambitious of the manned space programs, had as its goal the landing of astronauts on the moon and their safe return to earth. On July 21, 1969, the goal of landing a man on the moon was achieved when Apollo 11 astronauts Armstrong, Aldrin, and Collins successfully executed history's first lunar landing. An estimated 500,000 saw the liftoff which was the final launch of the Apollo lunar landing program (Anon 1994:86-90).

This increased exposure of the Brevard County area through the use of televised lift-offs increased tourism to the area. The space race also demanded civilian and military personnel to work at the installation and at the technological industries created to support KSC. By the late 1960s, at the peak of the Apollo program, Brevard County relied heavily upon space-related employment. This reliance created an acute problem when the county underwent a recession in the early 1970s because KSC, CCAFS, and related industries laid off workers at the conclusion of the Apollo program (Tebeau 1980:464). The economy eventually stabilized by the late 1970s and continued to diversify in the 1980s relying on increased industry and tourism (Stone 1988). In 1993, Brevard County had a population of 427,035, making the county the ninth largest in the state (Purdum 1994:10).

5.0 RESEARCH CONSIDERATIONS AND METHODS

5.1 Background Research and Literature Review

A comprehensive review of archaeological and historical literature, records, and other documents, and data pertaining to the project area was conducted. The focus of this research was to ascertain the types of cultural resources known in the project area and vicinity, their temporal/cultural affiliations, site locational information, and other relevant data. This included a review of sites listed in the NRHP, the Florida Master Site File (FMSF), cultural resource survey reports, published books and articles, unpublished manuscripts, land and population records, maps, and interviews. FMSF data were obtained in March 2003. However, according to Dr. Marion Smith, FMSF Administrator, input of site file and survey data may be a month or more behind receipt at the FMSF.

5.1.1 Archaeological Considerations:

For archaeological survey projects of this kind, specific research designs are formulated prior to initiating fieldwork to delineate project goals and strategies. Of primary importance is an attempt to understand, on the basis of prior investigations, the spatial distribution of known resources. Such knowledge serves not only to generate an informed set of expectations concerning the kinds of sites which might be anticipated within the project areas, but also provides a valuable regional perspective, and thus, a basis for evaluating any new sites discovered.

A review of the FMSF revealed that no archaeological sites are currently recorded within Alternative 1, Alternative 2, or the SERPL expansion site. Limited subsurface testing of two areas within Alternative 2, conducted during predictive model survey of the KSC South area, yielded negative results (ACI 1992:13). The closest recorded site (8BR217) is located about 1.7 miles away. Overall, seven archaeological sites are recorded within about three miles of the project area (Table 5.1). These include two burial mounds, a 20th century artifact scatter, and four precontact period artifact scatters.

Table 5.1. Previously Recorded Sites Within Three Miles of the Project Area.

Site Number	Site Type	Period	Recorder/Reference
8BR63	burial mound	Precontact	Rouse 1951
8BR150	burial mound	Precontact	Long 1967
8BR157	artifact scatter	St. Johns II	Long 1967; ACI 1992
8BR217	historic artifact scatter	20 th century	Dickinson 1983
8BR1606	artifact scatter	St. Johns I; 20 th c. American	ACI 1992
8BR1695	artifact scatter	St. Johns	Ashley and Chance 1997
8BR1696	artifact scatter	St. Johns	Ashley and Chance 1997

Little is known about the two burial mounds, recorded by Rouse and Long. 8BR157, the Kars Park Site, was originally recorded by George Long in 1965 on the basis of a surface

reconnaissance. This site, located along the Banana River, was relocated and archaeologically tested in 1992 by ACI during predictive model survey of the KSC South area (ACI 1992). Based upon the results of this work, the site was dated to the St. Johns II period, circa A.D. 800-1565. ACI also recorded another artifact scatter type site, 8BR1606, a short distance to the north. This resource yielded evidence of occupation during the St. Johns I period (circa A.D. 100-800) and early 20th century (circa 1900-1940). 8BR217, a 20th century historic refuse site, was recorded in 1983 by Martin Dickinson during survey of the KSC Cargo Hazardous Servicing Facility Site. Two other small St. Johns period artifact scatters were recorded during survey of a dredge material management area located about 0.4 miles east of the Indian River (Ashley and Chance 1997).

During the 1992 predictive model survey of the KSC South area (Option 2 Area), sandy ridge zones characterized by relative relief, well-drained soils of the Pomello and Palm Beach types, and scrub oak vegetation, were considered to have a moderate to high site location potential, with site potential increased for lands proximate to freshwater (ACI 1992:15). One such moderate probability zone was identified in Section 18 of Township 23 South, Range 37 East. This zone is located within the eastern part of Alternative 2. Areas characterized by level terrain and poorly to very poorly drained soil were considered to have a low site location potential (ACI 1992:15). These environmental features describe Alternative 1 and the SERPL expansion site, both considered to have a low archaeological site location potential.

Given the known patterns of aboriginal settlement, it was anticipated that one or two small artifact scatters might be found along the low ridge within Alternative 2. Based on the results of historic research, the potential for archaeological sites of the historic period was considered low. No 19th century homesteads, forts, military trails, or Indian encampments were expected. However, historic refuse associated with the structures depicted on the historic maps, as well as the 1962 KSC Master Plan aerials, as discussed in Section 5.1.2, was considered possible.

5.1.2 Historical Considerations:

A review of the FMSF revealed that no historic structures were recorded previously within the project area. Examination of a 1936 Brevard County Highway Map (Cantley et al. 1994:93), 1949 USGS quadrangle maps, and the KSC Master Plan Map C-5 indicated the former presence of a few structures within the project area. Specifically, the 1936 highway map depicts two structures in the southwest quarter of Section 6 (SERPL expansion site), due east of a road which ran along the section lines; and one structure to the west in the extreme northeast corner of Section 12 (Alternative 1). A fourth structure was illustrated in the northeast quarter of Section 18 (Alternative 2), due east of a road which ran north/south through the center of this section. Jerome Road was then named County Highway 70, and SR 3 was Highway 219. The 1949 USGS Orsino and Courtenay quadrangle maps depict two structures due east of Alternative 1 in the southeast quarter of Section 1, and one building in Section 6 (SERPL), on the other side of the old road. No improvements are indicated within Section 18. Finally, the 1962 aerial map (KSC Master

Plan Map C5), indicated one due east of Alternative 1 (now Space Commerce Way), and a small structure in the extreme northwest corner of the SERPL expansion site. No improvements were depicted within Alternative 2. However, two clusters of buildings were shown directly to the north, to the immediate northeast and northwest of the SR 3/Jerome Road intersection. Examination of the 1976 quadrangle maps, as well as a ground surface reconnaissance, indicated that these structures are no longer extant. Presumably, these properties were either relocated or destroyed in the early 1960s (1962-1964) following acquisition by the federal government.

5.2 Field Methodology

Archaeological field survey methods consisted of ground surface reconnaissance and limited subsurface testing. Field survey efforts were focused on the area within Alternative 2 previously identified (ACI 1992) as having a moderate archaeological site location potential. Alternative 1 and the SERPL expansion site, deemed to have a low site potential, were archaeologically sampled. Subsurface testing was systematically carried out at 82 ft (25 m) and 164 ft (50 m) intervals in the moderate probability zone. Additional shovel tests also were dug at 41 ft (12.5 m) intervals in order to determine site dimensions. Shovel tests were circular and measured approximately 1.6 ft (0.5 m) in diameter by at least 3.3 ft (1 m) in depth. All soil removed from the test pits was screened through a 0.25 in (6.4 mm) mesh hardware cloth to maximize the recovery of artifacts. The locations of all shovel tests were plotted on the aerial maps, and, following the recording of relevant data such as stratigraphic profile and artifact finds, all test pits were refilled.

Historic resources field survey consisted of a reconnaissance of the two alternatives plus the SERPL expansion site to determine whether the structures depicted on the old quadrangle maps and KSC Master Plan map were still extant, and if so, to ascertain whether such resources were potentially eligible for listing in the NRHP.

5.3 Laboratory Methods and Curation

If cultural materials were recovered, it was planned to initially clean and sort them by artifact class. Lithics would be divided into tools and debitage on the basis of gross morphology. Tools would be measured, and the edges examined with a 10x hand lens for traces of edge damage. Lithic debitage would be subjected to a limited technological analysis focused on ascertaining the stages of stone tool production. Flakes and non-flake production debris (i.e., cores, blanks, performs) would be measured, and examined for raw material types and absence or presence of thermal alteration. Flakes would be classified into four types (primary decortication, secondary decortication, non-decortication, and shatter) on the basis of the amount of cortex on the dorsal surface and the shape (White 1963). Aboriginal and historic ceramics would be classified into commonly recognizable types on the basis of observable characteristics such as aplastic inclusions and surface treatment. Only one artifact was recovered as the result of this

project. It, along with all associated project-related records, will be transferred to the client following completion of this project.

5.4 Unexpected Discoveries

If human burial sites such as Indian mounds, lost historic and prehistoric cemeteries, or other unmarked burials or associated artifacts were found, then the provisions and guidelines set forth in Chapter 872, F.S. (Florida's Unmarked Burial Law) were to be followed. However, it was not anticipated that such sites would be found during this survey.

6.0 SURVEY RESULTS AND RECOMMENDATIONS

6.1 Archaeological

Archaeological field survey of the project area included both ground surface reconnaissance and limited systematic subsurface testing. As a result, one archaeological site, evidenced by a single artifact, was newly identified within Alternative 2. No archaeological sites were found in Alternative 1 or the SERPL expansion site. A summary of survey findings for each area follows.

Alternative 1, characterized by level and poorly to very poorly drained soils, was considered to have a low archaeological site location potential. At the time of survey, much of this area, cultivated in citrus trees (Photo 6.1), was covered by standing water. Survey methods consisted of a thorough pedestrian surface with ground surface inspection. No subsurface shovel tests were excavated. As a result, no precontact period cultural materials were observed. Concrete rubble and an old pump tank were observed near a large live oak and patch of banana trees in the eastern portion of the Alternative 1 area. This debris may be associated with a historic house which was once located in the vicinity (Jim Butts, personal communication, March 2003). The original house location, evident on the 1962 KSC Master Plan map (C-5), is currently under the recently constructed Space Commerce Way. According to tract book records, this land (southeast quarter of the southeast quarter of Section 1, Township 23 South, Range 36 East) was originally purchased in 1917 by Edward J. McGrath. No information about Mr. McGrath was found in the local histories (cf., Eriksen 1994; Shofner 1995).

The **SERPL Expansion Site**, environmentally similar to Alternative 1, also was considered to have a low site location potential. At the time of survey, this abandoned grove area was overgrown with elephant grass, Brazilian pepper, and Spanish needles. Six shovel tests were excavated throughout this property at a 50 m (164 ft) interval (Figure 6.1a). Such work yielded negative results. Subsurface testing revealed an upper zone of black mucky humus, approximately 15 cm in thickness, underlain by 20 cm of gray limestone marl. Limestone bedrock was encountered at about 35 cm below surface. No evidence of a structure located in the northwest corner of this area, as depicted on the 1962 KSC Master Plan map (C-5), was observed.

The **Alternative 2** property, located east of SR 3 and south of Jerome Road, includes a well-drained elevated zone which was identified previously (ACI 1992) as a moderate probability area. Archaeological field survey efforts were focused along the sandy ridge, vegetated with blue saw palmetto, scrub oak, smilax, gallberry, wax myrtle, and scattered longleaf pines (Photo 6.2). Survey methods included ground surface reconnaissance along firebreaks, trails, and other sandy exposures, as well as systematic subsurface testing. A total of 54 shovel tests were excavated along and proximate to the ridge (Figure 6.1b). Of these, 30 were excavated at a 50 m (164 ft) interval, 22 at a 25 m (82 ft) interval, and two were placed at a 12.5 m (41 ft) interval. The stratigraphic profile revealed in the majority of shovel tests consisted of an upper zone of gray sand

measuring approximately 20 cm in thickness, underlain, to a depth of 1 m, by light gray sand. No cultural materials were recovered from any of the shovel tests. However, one artifact was found on the ground surface. This find was recorded as a new archaeological site, and assigned the FMSF number 8BR1850. A site description is provided below, and a completed FMSF form is contained in Appendix B.

In addition to this find, a concentration of domestic refuse was observed in the extreme northwest corner of Alternative 1, just east of SR 3 and south of Jerome Road. Bottle glass and whiteware ceramics were noted, in addition to concrete rubble, pieces of asbestos shingles, and aluminum roofing material. The materials observed may be associated with historic structures originally situated directly north of Jerome Road, to the immediate east and west of SR 3, in accordance with the 1962 KSC Master Plan Map (C-5). These structures are no longer extant.

8BR1850: The Bull Snake Ridge Site, evidenced by a single St. Johns Check Stamped sherd, is located in the southwest quarter of Section 18 in Township 22 South, Range 37 East (USGS Courtenay, Fla. 1976) (Figure 6.1b). The site is situated on the western side of a low ridge (Photo 6.1), with an elevation of 10 ft. (3 m) above mean sea level. The local soil type is Pomello fine sand, a nearly level, moderately well drained sandy soil found on broad low ridges, low knolls and areas on the Atlantic Coastal Ridge. The closest natural freshwater source is an isolated pond approximately 50 m (164 ft) to the northeast. The Banana River is approximately 1.5 miles to the east. Local vegetation includes saw palmetto, scrub oak, gallberry, wax myrtle, smilax, and bay.

The Bull Snake Ridge site was discovered as the result of intensive ground surface reconnaissance. The excavation of 31 shovel tests in the vicinity (Figure 6.1b) yielded negative results. Based upon the type of pottery discovered, this site is dated to the St. Johns II period, circa A.D. 800-1565. The single artifact probably represents ephemeral use of the area. While the recorded location of this one diagnostic artifact type site is of interest to regional settlement pattern studies, given the absence of subsurface expression, and limited artifact yield, 8BR1850 is considered to have low research value. It is not considered eligible for listing in the NRHP. No further work is recommended.

6.2 Historical

The historical/architectural survey of the project area revealed an absence of extant historic (pre-1953) resources within Alternative 1, Alternative 2, and the SERPL expansion site.

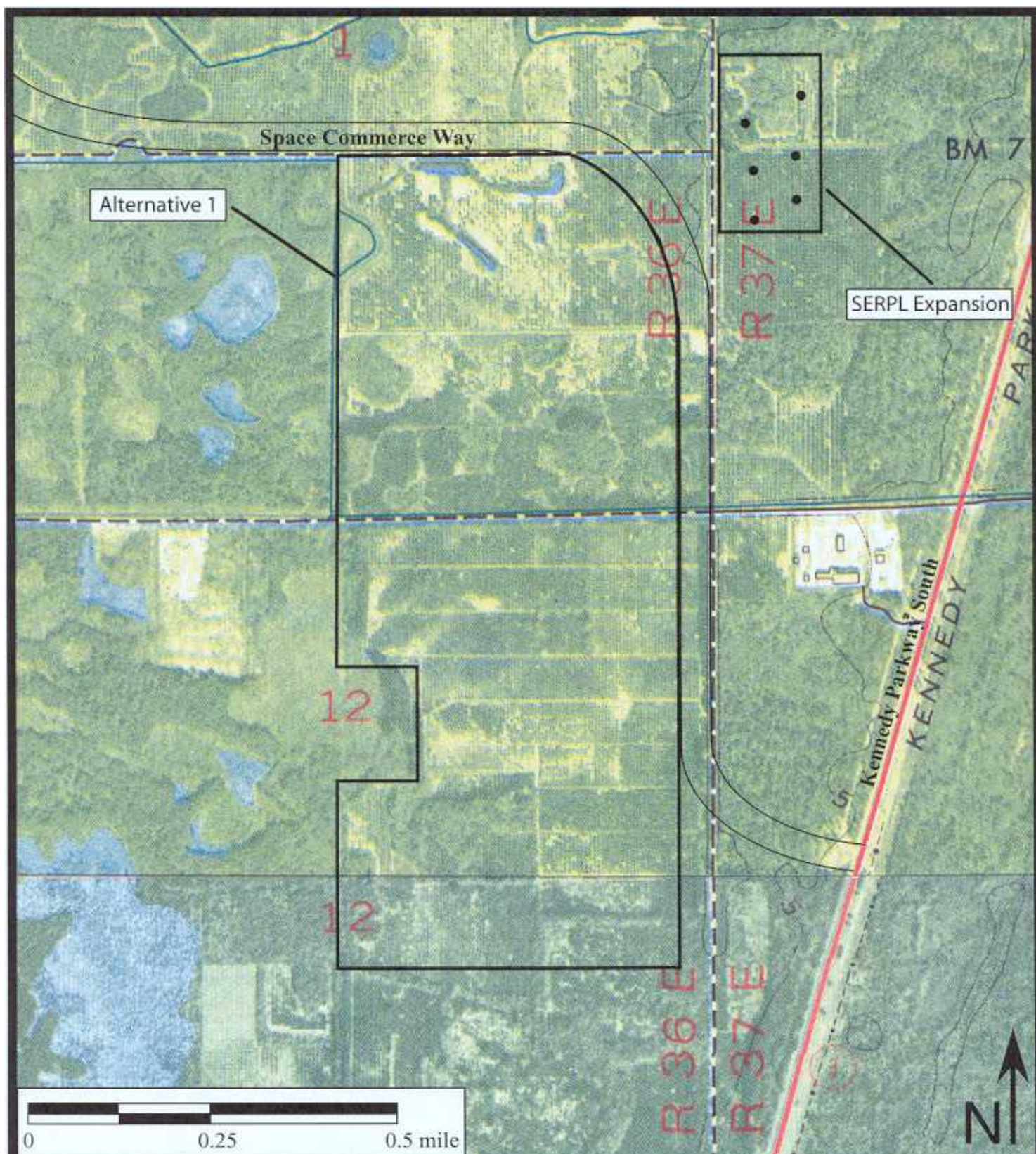


Figure 6.1a. Location of Shovel Tests within the SERPL Expansion, Township 23 South, Ranges 36 and 37 East (USGS Orsino, Fla. 1976 and Courtenay, Fla. 1976). Dots indicate shovel tests (not to scale).



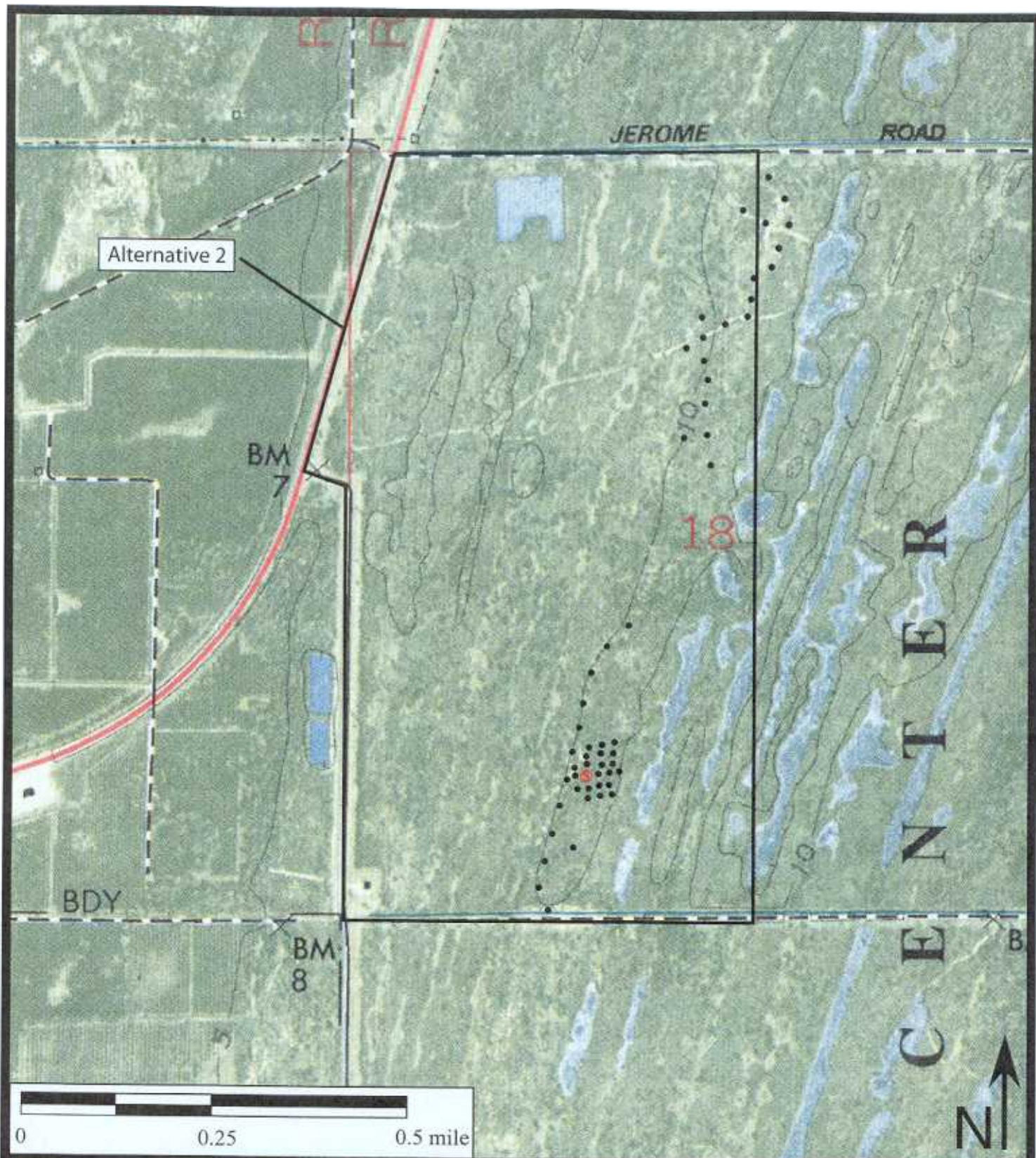


Figure 6.1b. Location of Shovel Tests and Surface Sherd within Alternative 2, Township 23 South, Ranges 36 and 37 East (USGS Orsino, Fla. 1976 and Courtenay, Fla. 1976). Dots indicate shovel tests (not to scale); "S" denotes surface sherd.





Photo 6.1. Looking northeast in vicinity of 8BR1850.

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APPENDIX A: Survey Requirement Letter

VISIONS OF FLORIDA DEPARTMENT OF STATE
Office of the Secretary
Office of International Relations
Division of Elections
Division of Corporations
Division of Cultural Affairs
Division of Historical Resources
Division of Library and Information Services
Division of Licensing
Division of Administrative Services



FLORIDA DEPARTMENT OF STATE
Jim Smith
Secretary of State
DIVISION OF HISTORICAL RESOURCES

8K
MEMBER OF THE FLORIDA CABINET
State Board of Education
Trustees of the Internal Improvement Trust Fund
Administration Commission
Florida Land and Water Adjudicatory Commission
Siting Board
Division of Bond Finance
Department of Revenue
Department of Law Enforcement
Department of Highway Safety and Motor Vehicles
Department of Veterans' Affairs

Ms. Cindy Cranick
Florida State Clearinghouse Coordinator
Florida Department of Environmental Protection
3900 Commonwealth Boulevard, Mail Station 47
Tallahassee, Florida 32399-3000

November 15, 2002

RE: DHR No. 2002-10514 / Received by DHR: November 6, 2002
SAI #: 200210313050C
Scoping Notice for the Proposed International Space Research Park, JFK Space Park
Brevard County, Florida

Dear Ms. Cranick:

Our office received and reviewed the above referenced project in accordance with Section 106 of the *National Historic Preservation Act of 1966* (Public Law 89-665), as amended in 1992, and *36 C.F.R., Part 800: Protection of Historic Properties* and Florida's Coastal Management Program, for possible impact to historic properties listed, or eligible for listing, in the *National Register of Historic Places*, or otherwise of historical, architectural or archaeological value. The State Historic Preservation Officer is to advise and assist state and federal agencies when identifying historic properties, assessing effects upon them, and considering alternatives to avoid or minimize adverse effects.

A review of the project information and the Florida Master Site File indicates that cultural resources are located in the proposed project area. We look forward to reviewing the International Space Research Park proposal and coordinating with the National Aeronautics and Space Administration in the protection and preservation of significant cultural resources. This office shall make determinations of effect on the various resources when our office receives the specific projects. If these conditions are met, the project will be consistent with Section 106 of the *National Historic Preservation Act of 1966*, and the historic preservation aspects of Florida's Coastal Management Program.

If there are any questions concerning our comments or recommendations, please contact Sarah Jalving, Historic Sites Specialist, by electronic mail at sjalving@mail.dos.state.fl.us or at 850-245-6333 or SunCom 205-6333. Thank you for your interest in protecting Florida's historic properties.

Sincerely,

Janet Snyder Matthews, Ph.D., Director, and
State Historic Preservation Officer

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NOV 25 2002
DIPLOMA

500 S. Bronough Street • Tallahassee, FL 32399-0250 • <http://www.flheritage.com>

☐ Director's Office
(850) 245-6300 • FAX: 245-6435

☐ Archaeological Research
(850) 245-6444 • FAX: 245-6436

☒ Historic Preservation
(850) 245-6333 • FAX: 245-6437

☐ Historical Museums
(850) 245-6400 • FAX: 245-6433

☐ Palm Beach Regional Office
(561) 279-1475 • FAX: 279-1476

☐ St. Augustine Regional Office
(904) 825-5045 • FAX: 825-5044

☐ Tampa Regional Office
(813) 272-3843 • FAX: 272-2340

APPENDIX B: Florida Master Site File (FMSF) Form

ARCHAEOLOGICAL SITE FORM

FLORIDA MASTER SITE FILE

Site #8 BR1850

Recorder Site #

Field Date 3/5/03

Form Date 3/24/03

☒ Original☐ Update

(give site #)

Version 2.2 3/97

Consult Guide to Archaeological Site Forms for detailed instructions.

Site Name(s) Bull Snake RidgeProject Name International Space Research Park at KSC

Multiple Listing (DHR only)

FMSF Survey #

Ownership: ☐ private-profit ☐ private-nonprofit ☐ private-individ. ☐ private-unspecified. ☐ city ☐ county ☐ state ☒ federal ☐ foreign ☐ Native Amer. ☐ unknownUSGS 7.5 Map Name & Date Courtenay, Fla. 1976County BrevardTownship 23S Range 37E Section 18 ☐ Check if Irregular Section: Qtr. Section (check all that apply): NE NW ☐ SE ☒ SW

Landgrant _____ Tax Parcel # (s) _____

City/Town (if within 3 mi.) _____

In Current City Limits: y n ☐ unknownUTM: Zone ☐ 16 ☒ 17 Easting 532240 Northing 31500Address/ Vicinity of/ Route to From NASA Parkway, take SR 3 to Jerome Rd. Go east on Jerome Rd. Site is about .8 miles south.
along western side of scrub-vegetated ridge.Name of Public Tract (e.g., park) Kennedy Space Center

TYPE OF SITE (Check all that apply; if none, write others in at bottom)

SETTING *

- ☒ Land-terrestrial
- ☐ Cave/Sink- subterranean
- ☐ terrestrial
- ☐ aquatic
- ☐ intermittently flooded
- ☐ Wetland- palustrine
- ☐ usually flooded
- ☐ sometimes flooded
- ☐ usually dry
- ☐ Lake/Pond- lacustrine
- ☐ River/Stream/Creek- riverine
- ☐ Tidal- estuarine
- ☐ Saltwater- marine
- ☐ marine unspecified
- ☐ "high energy" marine
- ☐ "low energy" marine
- ☐ Other _____

STRUCTURES - OR - FEATURES *

- ☐ aboriginal boat
- ☐ agric/farm building
- ☐ burial mound
- ☐ building remains
- ☐ cemetery/grave
- ☐ dump/refuse
- ☐ earthworks
- ☐ fort
- ☐ midden
- ☐ mill unspecified
- ☐ mission
- ☐ mound unsp.
- ☐ plantation
- ☐ platform mound
- ☐ road segment
- ☐ shell midden
- ☐ shell mound
- ☐ shipwreck
- ☐ subsurface features
- ☒ surface scatter
- ☐ well

FUNCTION *

- ☒ none specified
- ☐ campsite
- ☐ extractive site
- ☐ habitation (prehistoric)
- ☐ homestead (historic)
- ☐ farmstead
- ☐ village (prehistoric)
- ☐ town (historic)
- ☐ quarry

HISTORIC CONTEXT

Aboriginal*

- ☐ Alachua
- ☐ Archaic, Early
- ☐ Archaic, Middle
- ☐ Archaic, Late
- ☐ Archaic unspecified
- ☐ Belle Glade I
- ☐ Belle Glade II
- ☐ Belle Glade III
- ☐ Belle Glade IV
- ☐ Belle Glade unsp.
- ☐ Cades Pond
- ☐ Deptford
- ☐ Other _____
- ☐ Englewood
- ☐ Fort Walton
- ☐ Glades Ia
- ☐ Glades Ib
- ☐ Glades I unsp.
- ☐ Glades IIa
- ☐ Glades IIb
- ☐ Glades IIc
- ☐ Glades II unsp.
- ☐ Glades IIIa
- ☐ Glades IIIb
- ☐ Glades IIIC
- ☐ Glades III unsp.
- ☐ Glades unsp.
- ☐ Hickory Pond
- ☐ Leon-Jefferson
- ☐ Malabar I
- ☐ Malabar II
- ☐ Manasota
- ☐ Mount Taylor
- ☐ Norwood
- ☐ Orange
- ☐ Paleoindian
- ☐ Pensacola
- ☐ Perico Island
- ☐ Safety Harbor
- ☐ St. Augustine
- ☐ St. Johns Ia
- ☐ St. Johns Ib
- ☐ St. Johns I unsp.
- ☐ St. Johns IIa
- ☐ St. Johns IIb
- ☐ St. Johns IIc
- ☒ St. Johns II unsp.
- ☐ St. Johns unsp.
- ☐ Santa Rosa
- ☐ Santa Rosa-Swift Creek
- ☐ Seminole: Colonization
- ☐ Seminole: 1st War To 2d

- ☐ Seminole: 2d War to 3d
- ☐ Seminole: 3d War On
- ☐ Seminole unspecified
- ☐ Swift Creek, Early
- ☐ Swift Creek, Late
- ☐ Swift Creek, unsp.
- ☐ Transitional
- ☐ Weeden Island I
- ☐ Weeden Island II
- ☐ Weeden Island unsp.
- ☐ Prehistoric nonceramic
- ☐ Prehistoric ceramic
- ☐ Prehistoric unspecified

Nonaboriginal*

- ☐ First Spanish 1513-99
- ☐ First Spanish 1600-99
- ☐ First Spanish 1700-1763
- ☐ First Spanish unspecified
- ☐ British 1763-1783
- ☐ Second Spanish 1783-1821
- ☐ American Territorial 1821-45
- ☐ American Civil War 1861-65
- ☐ American 19th Century
- ☐ American 20th Century
- ☐ American unspecified
- ☐ African-American

*Consult Guide to Archaeological Site Form for preferred descriptions not listed above (data are "coded fields" at the Site File).

- Potentially eligible for a local register? ☐ yes: name of register at right ☒ no ☐ insufficient info
- Individually eligible for National Register? ☐ yes ☒ no ☐ insufficient info
- Potential contributor to NR district? ☐ yes ☒ no ☐ insufficient info

Name of local register if eligible: _____

Explanation of Evaluation (Required if evaluated; limit to 3 lines; attach full justification) Single surface artifact with no subsurface expression. No research value.Recommendations for Owner or SHPO Action None.

DHR USE ONLY

OFFICIAL EVALUATIONS

DHR USE ONLY

NR DATE

KEEPER-NR ELIGIBILITY: ☐ yes ☐ no

Date

SHPO-NR ELIGIBILITY: ☐ yes ☐ no ☐ potentially elig. ☐ insufficient info

Date

DECIST DATE

LOCAL DESIGNATION:

Date

Local office

National Register Criteria for Evaluation ☐ a ☐ b ☐ c ☐ d (See National Register Bulletin 15, p.2)

HR6E06401-97 Florida Master Site File/Div. of Historical Resources/ R.A. Gray Bldg/ 500 South Bronough St., Tallahassee, FL 32399-0250

Phone (904) 487-2299/Suncom 277-2299/Fax (904) 921-0372/E-mail fmsfile@mail.dos.state.fl.us

Computer Document File P:\FSFIDOC\SF\FORMS\AR_FORM_V2.2DOC

ARCHAEOLOGICAL SITE FORM

Site # 8 BR1850

Consult *Guide to Archaeological Site Form* for detailed instructions

FIELD METHODS

SITE DETECTION*

- ☐ no field check ☒ exposed ground ☐ screened shovel
☒ literature search ☐ posthole digger
☐ informant report ☐ auger-size: _____
☐ remote sensing ☐ unscreened shovel

SITE BOUNDARIES*

- ☐ bounds unknown ☐ remote sensing ☐ unscreened shovel
☐ none by recorder ☒ insp exposed ground ☐ screened shovel
☐ literature search ☐ posthole tests ☐ block excavations
☐ informant report ☐ auger-size: _____ ☐ estimate or guess

Other methods; number, size, depth, pattern of units; screen size (attach site plan) 31 shovel tests at 12, 5, 25 and 50m intervals, most within 25m grid; 50cm diameter x 1m deep; 1/4" mesh screen. None productive.

SITE DESCRIPTION

Extent Size (m2) 1 Depth/stratigraphy of cultural deposit surface

Temporal Interpretation*- Components (check one): ☒ single ☐ prob single ☐ prob multiple ☐ multiple ☐ uncertain ☐ unknown
 Describe each occupation in plan (refer to attached large scale map) and stratigraphically. Discuss temporal and functional interpretation:

Integrity Overall disturbance*: ☒ none seen ☐ minor ☐ substantial ☐ major ☐ redeposited ☐ destroyed-document ! ☐ unknown
 Disturbances/threats/protective measures

Surface: area collected _____ m2 # collection units _____ Excavation: # noncontiguous blocks _____

ARTIFACTS

Total Artifacts # 1(C) (C)ount or (E)stimate? Surface # 1(C) (C) or (E) Subsurface # 0 (C) or (E)

COLLECTION SELECTIVITY*

- ☐ unknown ☒ unselective (all artifacts)
☐ selective (some artifacts)
☐ mixed selectivity

SPATIAL CONTROL*

- ☐ uncollected ☒ general (not by subarea)
☐ unknown ☐ controlled (by subarea)
☐ variable spatial control
☐ Other _____

ARTIFACT CATEGORIES* and DISPOSITIONS* (example: A bone-human)

Pick exactly one code from Disposition List

- | | |
|-----------------------------|---------------------------|
| _____ bone-animal | _____ exotic-nonlocal |
| _____ bone-human | _____ glass |
| _____ bone-unspecified | _____ lithics-aboriginal |
| _____ bone-worked | _____ metal-nonprecious |
| _____ brick/building debris | _____ metal-precious/coin |
| <u>A</u> ceramic-aboriginal | _____ shell-unworked |
| _____ ceramic-nonaboriginal | _____ shell-worked |
| _____ daub | _____ Others: _____ |

Disposition List*

- A- category always collected
 S- some items in category collected
 O- observed first hand, but not collected
 R- collected and subsequently left at site
 I- informant reported category present
 U- unknown

Artifact Comments

DIAGNOSTICS (Type or mode, and frequency: e.g., Suwannee ppk, heat-treated chert, Deptford Check-stamped, Ironstone/whiteware)

- | | | | | |
|----------------------------|-------------|----------|--------------|----------|
| 1. St. Johns Check Stamped | N= <u>1</u> | 5. _____ | N= <u>9</u> | N= _____ |
| 2. _____ | N= <u>6</u> | 6. _____ | N= <u>10</u> | N= _____ |
| 3. _____ | N= <u>7</u> | 7. _____ | N= <u>11</u> | N= _____ |
| 4. _____ | N= <u>8</u> | 8. _____ | N= <u>12</u> | N= _____ |

ENVIRONMENT

Nearest fresh water type* & name (incl. relict source) Slough Distance (m)/bearing 50m/E
 Natural community (FNAI category* or leave blank) Florida scrub
 Local vegetation Saw palmetto, scrub oak, smilax, gallberry, wax myrtle
 Topography* Ridge Min Elevation 3 meters Max Elevation 3 meters
 Present land use Vacant
 SCS soil series Pomello fine sand Soil association Paola-Pomello-Astatula

FURTHER INFORMATION

Informant(s): Name/Address/Phone/Email

Describe field & analysis notes, artifacts, photos. For each, give type* (e.g., notes), curating organization *, accession #s, and short description.
 Artifact and associated records provided to NASA, Environmental Management Office, Kennedy Space Center.

Manuscripts or Publications on the site (Use continuation sheet, give FMSF# if relevant) Cultural Resource Assessment Survey of the Proposed International Space Research Park at the John F. Kennedy Space Center, Brevard County, Florida. ACI, March 2003.

Recorder(s): Name/Addr./Phone/Email Jeff Moates/8110 Blaikie Court, Ste A, Sarasota, FL 34240/941-379-6206/ACIFlorida@comcast.net
 Affiliation* or FAS Chapter Archaeological Consultants, Inc. (ACI)

* Consult *Guide to Archaeological Site Form* for preferred descriptions not listed above (data are "coded fields" at the Site File).

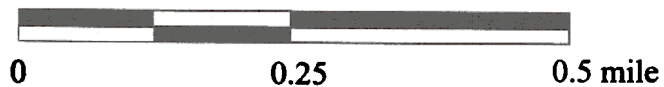
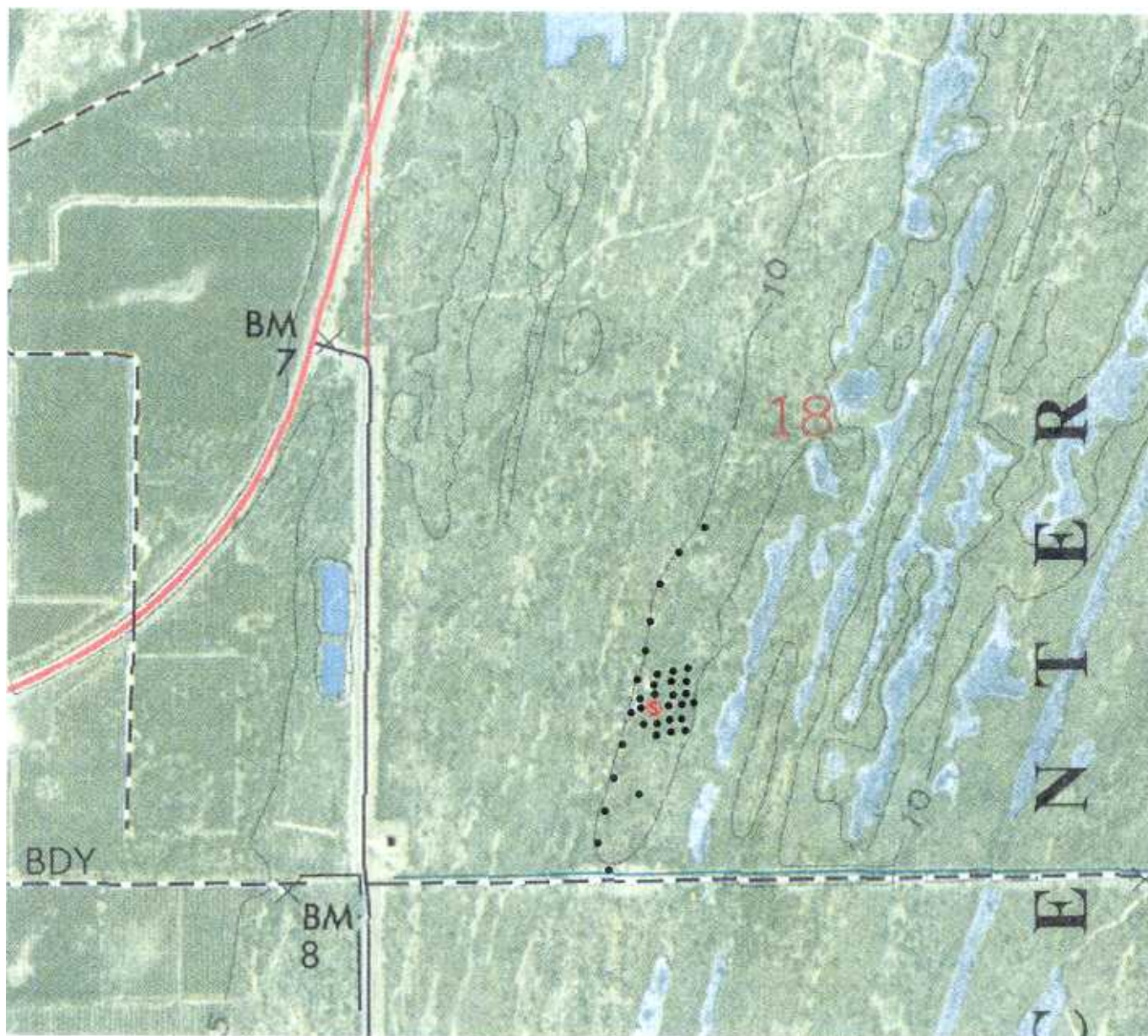


ARCHAEOLOGICAL SITE FORM

Site #8 BR1850

USGS MAP

Orsino, Fla. 1976 and Courtenay, Fla. 1976



ARCHAEOLOGICAL CONSULTANTS INCORPORATED

APPENDIX C: Survey Log Sheet

Form Date 3/24/03

Survey Log Sheet

Florida Master Site File

Version 2.0 9/97

Consult *Guide to the Survey Log Sheet* for detailed instructions.Recorder of Log Sheet Joan Deming

FMSF USE ONLY

FMSF Survey # _____

Identification and Bibliographic Information

Survey Project (Name and project phase) Phase I, International Space Research Park at the John F. Kennedy Space CenterIs this a continuation of a previous project? ☒ No ☐ Yes Previous survey#(s) _____Report Title (exactly as on title page) Cultural Resource Assessment Survey of the Proposed International Space Research Park at the John F. Kennedy Space Center, Brevard County, Florida

Report Author(s) (as on title page-individual or corporate) _____

Archaeological Consultants, Inc.

Publication Date (month/year) _____ Total Number of Pages in Report (Count text, figures, tables, not site forms) 64Publication Information (if relevant, series and no. in series, publisher, and city. For article or chapter, cite page numbers. Use the style of *American Antiquity*. See *Guide to the Survey Log Sheet*.) Archaeological Consultants, Inc.P.O. Box 5103, Sarasota, FL 34277-5103Supervisor(s) of Fieldwork (whether or not the same as author(s)) Joan DemingAffiliation of Fieldworkers (organization, city) Archaeological Consultants, Inc.Key Words/Phrases (Don't use the county, or common words like *archaeology, structure, survey, architecture*. Put the most important first. Limit each word or phrase to 25 characters.) Kennedy Space Center, Courtenay, SR 3

Survey Sponsors (corporation, government unit, or person who is directly paying for fieldwork)

Name Dynamac CorporationAddress/Phone 100 Spaceport Way, Cape Canaveral, Florida 32920/321-730-0770

Mapping

Counties (List each one in which field survey was done-do not abbreviate) BrevardUSGS 1:24,000 Map(s): Names/Dates: Orsino, Fla. 1976; Courtenay, Fla. 1976Remarks (Use supplementary sheet(s) if needed) Two of three areas considered to have low site location potential.

Description of Survey Area

Dates for Fieldwork: Start 3/3/03 End 3/7/03 Total Area Surveyed (fill in one) hectares _____ acres _____

Number of Distinct Tracts or Areas Surveyed 3

If Corridor (fill in one for each) Width _____ meters _____ feet Length _____ kilometers _____ miles

Types of Survey (check all that apply) ☒ archaeological ☒ architectural ☒ historical/archival ☐ underwater ☐ other: _____

HR6E06610-97 Florida Master Site File, Division of Historical Resources, Gray Building, 500 South Bronough St., Tallahassee, FL 32399-0250

Phone 850-487-2299, Suncom 277-2299, Fax 850-921-0372, Email fmsfile@mail.dos.state.fl.us, Web <http://www.dos.state.fl.us/dhr/msf>

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Survey Log Sheet of the Florida Master Site File

Research and Field Methods

Preliminary Methods (Check as many as apply to the project as a whole. If needed write others at bottom).

- | | | | |
|---|---|--|--|
| <input type="checkbox"/> Florida Archives (Gray Building) | <input checked="" type="checkbox"/> library research - (local public) | <input type="checkbox"/> local property or tax records | <input checked="" type="checkbox"/> windshield survey |
| <input type="checkbox"/> Florida Photo Archives (Gray Building) | <input type="checkbox"/> library-special collection- (non local) | <input type="checkbox"/> newspaper files | <input checked="" type="checkbox"/> aerial photography |
| <input checked="" type="checkbox"/> FMSF site property search | <input checked="" type="checkbox"/> Public Lands Survey (maps at DEP) | <input checked="" type="checkbox"/> literature search | |
| <input checked="" type="checkbox"/> FMSF survey search | <input checked="" type="checkbox"/> local informant(s) | <input type="checkbox"/> Sanborn Insurance maps | |
| <input type="checkbox"/> other (describe) _____ | | | |

Archaeological Methods (Describe the proportion of properties at which method was used by writing in the corresponding letter. Blanks are interpreted as "None.")

F(-ew: 0-20%, S(-ome: 20-50%); M(-ost: 50-90%); or A(-ll, Nearly all: 90-100%). If needed write others at bottom.

☐ Check here if NO archaeological methods were used.

- | | | |
|--|---|--|
| <input type="checkbox"/> surface collection, controlled | <input type="checkbox"/> other screen shovel test (size: _____) | <input type="checkbox"/> block excavation (at least 2x2 m) |
| <input checked="" type="checkbox"/> surface collection, uncontrolled | <input type="checkbox"/> water screen (finest size: _____) | <input type="checkbox"/> soil resistivity |
| <input checked="" type="checkbox"/> shovel test-1/4" screen | <input type="checkbox"/> posthole tests | <input type="checkbox"/> magnetometer |
| <input type="checkbox"/> shovel test-1/8" screen | <input type="checkbox"/> auger (size: _____) | <input type="checkbox"/> side scan sonar |
| <input type="checkbox"/> shovel test-1/16" screen | <input type="checkbox"/> coring | <input type="checkbox"/> unknown |
| <input type="checkbox"/> shovel test-unscreened | <input type="checkbox"/> test excavation (at least 1x2 m) | |
| <input type="checkbox"/> other (describe): _____ | | |

Historical/Architectural Methods (Describe the proportion of properties at which method was used by writing in the corresponding letter. Blanks are interpreted as "None.")

F(-ew: 0-20%, S(-ome: 20-50%); M(-ost: 50-90%); or A(-ll, Nearly all: 90-100%). If needed write others at bottom.

☐ Check here if NO historical/architectural methods were used.

- | | | | |
|---|--|---|---|
| <input type="checkbox"/> building permits | <input type="checkbox"/> demolition permits | <input type="checkbox"/> neighbor interview | <input type="checkbox"/> subdivision maps |
| <input type="checkbox"/> commercial permits | <input checked="" type="checkbox"/> exposed ground inspected | <input type="checkbox"/> occupant interview | <input type="checkbox"/> tax records |
| <input type="checkbox"/> interior documentation | <input type="checkbox"/> local property records | <input type="checkbox"/> occupation permits | <input type="checkbox"/> unknown |
| <input checked="" type="checkbox"/> other (describe): KSC employee internal; historic aerials | | | |

Scope/Intensity/Procedures Background research; historic structures reconnaissance; ground surface inspection; limited systematic subsurface testing.

Survey Results (cultural resources recorded)

Site Significance Evaluated? ☒ Yes ☐ No If Yes, circle NR-eligible/significant site numbers below.

Site Counts: Previously Recorded Sites 0 Newly Recorded Sites 1

Previously Recorded Site #'s (List site #'s without "8." Attach supplementary pages if necessary) n/a

Newly Recorded Site #'s (Are you sure all are originals and not updates? Identify methods used to check for updates, ie, researched the FMSF records). List site #'s without "8." Attach supplementary pages if necessary. BR1850

Site Form Used: ☐ SmartForm ☐ FMSF Paper Form ☒ Approved Custom Form: Attach copies of written approval from FMSF Supervisor and Supervisor-signed form.

DO NOT USE ***** SITE FILE USE ONLY ***** DO NOT USE

BAR Related

- | | |
|-------------------------------|-------------------------------|
| <input type="checkbox"/> 872 | <input type="checkbox"/> 1A32 |
| <input type="checkbox"/> CARL | <input type="checkbox"/> UW |

BHP Related

- | |
|--|
| <input type="checkbox"/> State Historic Preservation Grant |
| <input type="checkbox"/> Compliance Review CRAT # _____ |

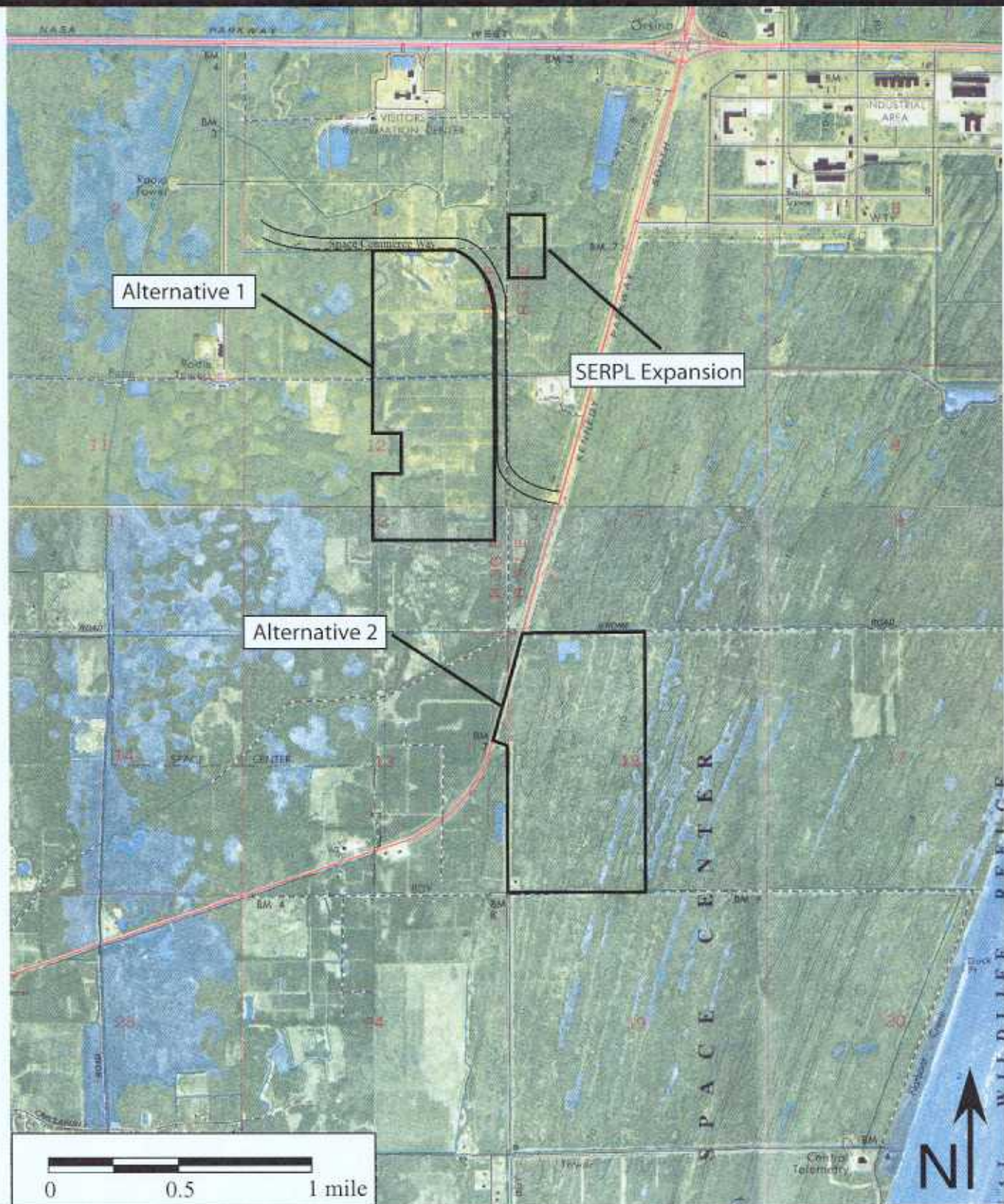
ATTACH PLOT OF SURVEY AREA ON PHOTOCOPIES OF USGS 1:24,000 MAP(S)

HR6E06810-97 Florida Master Site File, Division of Historical Resources, Gray Building, 500 South Bronough St., Tallahassee, FL 32309-0250

Phone 850-487-2299, Suncom 277-2299, Fax 850-921-0372, Email fmsfile@mail.dos.state.fl.us, Web http://www.dos.state.fl.us/dhr/mesl

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Project Location Map. Township 23 South, Ranges 36 and 37 East (USGS Orsino, Fla. 1976 and Courtenay, Fla. 1976).

